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ABSTRACT

The major aim of this study is to devise a model for rationalizing sports policies by defining the basic concepts that should be inherent in any proper sports policy despite the infinite diversity that characterizes actual sport situations. The first part of the study discusses three concepts which are basic to the model: a) the "level of sport" which denotes the overall objectives of sports policy; b) the "sports situation" which is the reality of sport as it is defined by the people, facilities, and organizations involved in all areas of sport and as it is limited by extra-sports elements, which include demographic, climatic, geographical, economic, and sociological conditions and the physical and anatomical characteristics of the population; and c) "development factors," or those activities which, when combined in programs, have the effect of improving the existing "level of sport." Part two of the study is a mathematical outline of a model for decision making with regard to rationalizing sport policy. Part three of the study contains the statistical instruments for implementing the mathematical model. (HMD)

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COMMITTEE FOR OUT-OF-SCHOOL EDUCATION
AND CULTURAL DEVELOPMENT

European co-operation
for the development of Sport for All

Rationalising sports policies

I. Outline of a methodology

prepared by
Mr Benito Castejon Paz
in collaboration with
MM Juan de Dios Garcia Martinez
and José Rodriguez Carballada

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Introductory note
by the Secretariat

In the autumn of 1971, the Council of Europe commissioned a series of studies on the problems involved in rationalising sports policies.

Mr Benito Castejon Paz (Spain) agreed to take charge of co-ordination. It was he, too, who conceived and elaborated the basic concepts of the methodology expounded.
Mr Juan de Dios Garcia Martinez and Mr José Rodriguez Carballada, for their part, undertook to deal with the specifically technical, notably the econometric and statistical, aspects. It is to them we owe Parts II and III of the study.

It is the findings of this research that the Secretariat is now publishing and, in doing so, it expresses its warmest thanks to MM Castejon, Garcia and Rodriguez.

Experts consulted by the Secretariat have remarked on the originality of this methodology. Mr Castejon would appear to be the first to have devised certain instruments for use in analysis and decision-making, which should be of help in defining and implementing a coherent and effective sports policy. One of the characteristics of the method is that it enables choices and alternatives to be expressed in quantitative terms : this explains how Mr Castejon came to propose bases for the construction of a mathematical model for decision-making.

Mathematical models, as everyone knows, have today become major instruments in determining economic choices (economic planning and policy-making by governments, large firms etc). Indeed, as the eminent French mathematician André Lichnerowicz put it, a mathematical model makes it possible "to see and plan ahead with the maximum degree of accuracy ... Only when such a model has been constructed can an apparently complex situation really be considered to have been cleared up ... A model built on axioms and made to function mathematically can (or not, as the case may be) tell us a great many things about the actual initial situation we started from and enable us to predict and control its evolution" (1).

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(1) Mathématique et Enseignement, p. 25; in the Revue Française de l'Electricité, 45th year, No. 238.

Mr Castejon has devised a methodology, that is to say, a set of instruments to enable us to grasp a given situation so that we can influence it in a particular way. It is at this point that we realise that this study goes beyond the sports sector. It concerns - and the subsequent pages bear this out - the entire socio-cultural sphere of which sport forms a part. Consequently it is obvious that, if this methodology proves practicable, it should be possible to apply its main principles to socio-cultural policy in general.

As far as it specifically concerns sport, this methodology should be applicable wherever it is desired to pursue a real sports policy, at whatever level (country, region, town, sports federation ...) and whatever the content of the policy (eg encouragement of a sporting élite or of sport for all).

The Secretariat was warned that this paper, dealing as it does with matters which might appear difficult to the non-initiated, was liable to disconcert readers lacking familiarity with modern planning methods. Some knowledge of these methods would seem indispensable for an appraisal of this study and of its practical value. All comments must therefore be left to the specialists. The co-authors do not pretend, however, to have produced a perfect methodology. As the sub-title indicates, it is merely a general outline, the broad lines of a comprehensive system whose details remain to be filled in.

The basic principles of the methodology were expounded by Mr Castejon in 1970 at the Vth Consultation of Non-governmental Sport Organisations, held at the Council of Europe's headquarters.

In a separate document, entitled Rationalising sports policies: II. The case of "Sportlandia" - a scenario (doc. CCC/EES (72) 65 Revised II), Mr Castejon has shown how the present methodology may be applied to a specific case.

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RATIONALISING DECISION-MAKING : WHY AND HOW?

by Mr Benito Castejon Paz

While an abundant bibliography exists on the different aspects of sport as a physical activity, we know of no study dealing with the political and administrative measures taken with regard to sport. No research has been done, for instance, on rationalising decision-making in this field.

The present study is intended to help repair this omission. An attempt will be made to define certain concepts and criteria with a view to rationalising decision-making, whatever the aims of the decisions may be. In other words, what we shall be proposing here is not a policy, but a method designed to ensure that the policy adopted produces maximum effect.

It seems necessary to stress the practical character of this work. There are many who seem to think that theoretical research is divorced from reality. But it is precisely when reality is not satisfactory and reform methods are not proving effective enough that theory needs to be resorted to as a means of clarifying the phenomena involved, and instruments from other disciplines used which have proved their worth in practice.

Our first aim is to identify the basic concepts inherent, under whatever name, in any set of decisions worthy of being called a sports policy. For, whatever the level of decision (government, region, town, sports organisation) and whatever the objective in view (sporting élite or sport for all) we should logically expect to find the same basic concepts enable us to see sports realities as components of a general structure, of a system. We must therefore, as a first step, consider the world of sport as a coherent system.

But though the world of sport may be considered, from the inside, as a coherent and hence self-regulating system, it is not independent in relation to the outside world. It is a component of a vaster unit whose other components are extraneous to sport but influence it nevertheless. The economic level, population structure, social customs etc have an undoubted influence on the practice of sport. They condition the practice of sport but the

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sports authorities cannot change them, at least not in the short or medium-term. They must therefore regard them as extraneous constants or as independent variables and make allowance for them in their policy.

This comprehensive view, which considers sport as an integral part of a whole composed of physical, social and cultural elements, is essential if the decisions taken are to be relevant. It is even more essential in the case of what we have called the "specifically sports elements", that is to say, all those elements on which a sports policy can bring influence to bear in order to change them. The position of each of these elements (equipment, training of leaders, school physical education, organisation etc) will be influenced by that of the others. It would therefore be a mistake to consider each element as having an isolated and independent set of problems peculiar to it. Thus a resolutely comprehensive view is indispensable here too, if partial and irrational solutions are to be avoided.

Generally speaking, an attempt will be made in the present study - and particularly in Part II dealing with econometrics - to demonstrate a method of quantifying the factors affecting sports policy, and the relations existing between them. Quantification obviously enables choices and alternatives to be formulated with maximum accuracy.

In Part III an indication will be given of the type of data which the responsible authorities will need in order to define a rational policy. The problem of sports statistics will be discussed in this connection.

This quantitative approach does not mean that the qualitative aspects of the sporting world will be considered as negligible. We are aware of the limitations of any purely rational and quantitative approach, but also of the importance of distinguishing clearly between those values which are capable of objective measurement and those which are not. We shall try in this way to achieve a certain rationalisation of sports policy and administration, while taking care not to force reality by juggling mathematical formulae.

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But, first, a few remarks are necessary concerning sport as the subject of a policy.

To start with, the character of sport is complex because it differs according to the degree of development of the societies in which it is practised. Though, in the abstract, sport is the same the world over, the interpretation and importance given to it differ from one society to another. Consequently, a wise sports policy must not only be based on general concepts and on a knowledge of the predominant tendencies in the majority of countries, but should also take account of the situation in the country concerned and the place accorded to sport.

Secondly, emphasis should be laid on the close connection between the various levels or types of sports practice. Those who claim that professional sport or competitive sport is not "real" sport cannot deny the basic interdependence between this type and genuinely amateur sport. Its economic impact is such that it must be considered an important element of any sports policy. The defeatist attitude of those who consider that sport for the masses must be the sole concern is unrealistic and liable to harm sport. But the reverse attitude is no less mistaken. For spectator sport to remain in the hand of financial groups, outside the control of a sports policy, would spell suicide. Sports problems cannot, any more than other problems, be solved by refusing to face facts and creating an imaginary world divorced from reality. A sports policy must be based on an actual situation, on the recognition that sport comprises both the purest amateurism and the strictest professionalism. The methodology proposed is built on this conception.

Thirdly, there is the political aspect of sport. No country can disregard sport in its general policy. There are several reasons why it cannot afford to do so: the generalisation of sport in numerous spheres of our daily life; its considerable economic importance; its undeniable appeal for the masses and, in some countries at least, its direct effects on certain political events, such as elections; the capital importance which should be accorded to sport in any modern socio-cultural policy relating to leisure, health, education and the environment. Sport must remain free from party influences. Thus a proper sports policy is necessary if sport is to be prevented from becoming a tool in the hands of certain groups.

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What practical purpose can this study serve? Firstly, as stated above, it is intended to promote the rationalising of sports policies by suggesting a number of instruments for analysis and decision-making which may be of help in defining a coherent and effective policy based on a strict analysis of facts and figures rather than on preconceived ideas.

I would state emphatically that the instruments and methods proposed here make no pretension to being perfect. As the sub-title of the study indicates, they merely constitute the broad lines of a methodology. It is these broad lines, that is to say a general approach, a set of methodological principles, and not details that we shall be concerned with here. Since I first began to develop this theory some years ago, every passing day has strengthened my conviction that these broad lines are logically coherent and that the methodology can be applied in practice with a much greater degree of efficiency than in the case of conventional systems. But at the same time I have been convinced since the start that further study by experts will be necessary in order to work out all the details, in particular the ideal or desirable quantitative relations, as regards the mass-élite ratio for example. It must obviously be left to the responsible authorities to determine that ratio according to the situation existing in their respective countries.

The methodology is intended as an instrument for the analysis and investigation involved in operations such as:

- measuring (quantitatively) the level of sports development in a country, municipality, organisation etc;
- checking and assessing the results (quantified) of the sports policy of that country, municipality, organisation etc;
- planning, that is to say, determining, rationally and quantitatively, the aims of that policy and the means to be employed in order to attain the desired sports level.

In addition to these practical advantages, the methodology proposed might also serve as a medium for communication between all the countries or bodies which adopt it. The concepts defined in it are, in effect, a common language offered to those responsible for sports policies. The adoption of a common language, that is to say a standardised methodology, is indispensable for fruitful discussion, in that it enables maximum profit to be derived from an exchange of information and a comparison of results.

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The methodology proposed could thus make for more effective co-operation among countries and organisations. The fact is that, at present, international comparison of data is virtually impossible. Comparison of the actual policies themselves is even more difficult, for it is beyond anyone to form anything like an exact impression of what is happening elsewhere. The fact that there is no international assembly which compares and discusses systematically the various policies, or administrative structures and methods, whether public or private, is a measure of the under-developed state of co-operation in this field. International contacts are usually confined to exchanges of information on sports techniques. Discussion of policy and administrative questions is sadly lacking.

The same applies, I may say, to cultural policies in general. The lack of maturity throughout the whole sector is reflected by the under-development of operational research, by the absence of a coherent system of cultural indicators and by the dearth of meaningful statistics and cultural accounts. The few attempts made at quantification and rationalisation have not been very satisfactory. The application of economic planning techniques has not proved too convincing, chiefly because of a failure to consider the vast field of cultural phenomena as a coherent system. Besides, care has not always been taken to keep the process of quantifying the objective strictly separate from that of estimating expenditure. In these conditions, the application pure and simple of economic planning methods cannot but lead to what I regard as sterile structures.

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As I said earlier, the main aim of this study is to define the basic concepts which should be inherent, despite the infinite diversity characterising the actual situations, in any proper sports policy. Starting from the complex conditions prevailing in sport and from practical empiricism, we shall try and identify the internal structure of the sporting world and the laws which govern it; in other words, we shall try and bring out the internal system underlying all empirical methods and practices and, by a process of abstraction, construct a basic model free from any accessory.

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This system comprises three fundamental concepts: the "level of sport", the "sport situation", and the "development factors". The whole of Part I of this study will be devoted to these.

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Part I

The conceptual instruments

by

M. Benico CASTEJON PAZ

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CHAPTER I

THE LEVEL OF SPORT

Of the three basic concepts of the methodology expounded here, "the level of sport" is undoubtedly the most important. It raises the fundamental problem of any policy: that of the choice of objectives.

1. The need for coherence : indispensable condition of any policy

Everyone would probably agree that improvement in the level of sport (or: the development of sport - the expression used is immaterial for the time being) is the main objective of any sports policy. But beyond this general affirmation, there is a great deal of divergency, uncertainty and confusion as to the exact content and implications of this essential objective.

Some say that sport should promote public health, the education of the young, the solution of leisure problems, a nation's prestige or even its economic development. It is usually persons unconnected with sport, those at the head of political, socio-cultural and economic affairs, for instance, who talk in these terms. For them sport is not an end in itself, but a means of attaining a vaster objective outside the realm of sport. The aims they assign to sports policy do not concern sport itself.

Others assert that the development of sport as such should be the prime objective of any sports policy. This is the view generally held by the sports authorities. The difficulties start, however, when they are asked to explain what exactly is meant by this. A first category will perhaps confess that they are incapable of being any more explicit. For such as these, because they do exist, expressions like "development of sport", "improvement in the level of sport" etc are simply vague, ill-defined notions. It is a sure sign that they have no exact idea either of the objectives or of the means of the policy they claim to be pursuing - which is tantamount to saying that they have, in fact, no policy at all.

A second category will perhaps have very definite ideas, in which case opinions may be strongly divided. For some, Olympic medals and records will be the main aims of sports policy; others will hold that priority should be given to the practice of sport by the greatest number possible: this is the policy of Sport for All; others again will maintain that the principal objective is to build installations, train cadres etc.

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All these opinions may be perfectly justifiable. Olympic medals and records may have just as valid objectives as, for example, Sport for All, physical education in schools or the development of a particular branch of sport. But all these objectives - and one could go on quoting examples ad infinitum - have this in common that they are fragmentary and limited. They are not mutually exclusive: on the contrary, they are complementary. The fatal error would be to consider any single one as being the supreme objective of a sports policy, for, as Paul Valéry said, the mistake would be in taking the part for the whole.

Any policy worthy of the name is the sum total and, more important, the synthesis of partial objectives (or "sub-objectives") grouped, according to a logical hierarchy, around a broad, overall objective. In other words, coherence is the primary quality of any genuine policy: a policy becomes a strategy only if it is coherent.

Planning or defining a policy is thus basically a logical operation in that the process involved is one of establishing logical and hierarchical relations in a set of objectives and means. Only in this way are rational choices possible. Modern management and systems analysis techniques are based on these principles. They have, as everyone knows, proved their worth in economic planning and military strategy.

That is why I propose to introduce the concept of "level of sport". It is a term I shall use to denote the overall objective of sports policy, that is to say, the supreme objective in a hierarchy of objectives (or of categories of objectives) varying in importance. The "level of sport" (1) thus becomes the "aim of aims", or the "meta-objective" as it would be called in structuralist jargon.

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(1) As previously stated, the actual term used is immaterial. Personally, I cannot think of any more appropriate one, but there would obviously be no objection to using a similar expression such as "development of sport".

The adoption of a broad concept like this is indispensable to the rationalising of decisions. Such a concept is the basic instrument of any rationalisation process. It fulfils four closely interrelated functions.

a. Firstly, the adoption of an overall concept is indispensable when it comes to considering the general strategy, the major objectives and main options. For example, there is the - often agonising - problem of the choice between the élite and the masses - one might say between quality and quantity. This is the constant dilemma in sports policy and, indeed, in any socio-cultural policy.

b. Secondly, an overall concept is necessary for the purpose of establishing effective co-ordination between different categories of objectives, and also between the objectives and the means.

The problem of co-ordinating or harmonising the policies pursued by different bodies is clearly a major one for international co-operation. But it is even more formidable when it has to be tackled at national level, and such cases are, alas, neither imaginary nor exceptional, for numerous countries have instead of a single sports policy, a variety of juxtaposed policies devised and applied by several bodies: the central government, the different local authorities, the national confederation of sports organisations, the specialised federations and so forth. It is essential, if this mass of disparate, often contradictory and divergent efforts are to be transformed into a single coherent and integrated policy, to define a major overall objective. Only on this condition can a systematic analysis be made of all the choices that are possible, desirable and necessary.

But defining an overall objective is but a first step. According to the laws of logic, this first step leads to a second one, namely that of determining how many possible, desirable and necessary objectives (they might be called "primary objectives") are comprised in the overall objective. Then the secondary objectives (and thereafter the tertiary objectives, and so on) implied in each of the main objectives will have to be determined, in their turn by the same logical and systematic process. In this way, a whole series of concepts will develop logically from the basic concept and enable the objectives to be arranged in their hierarchical structure. It is only by thus defining the content of, and relations between, the objectives that rational co-ordination becomes possible: each of the various responsible bodies is assigned its particular function and contributes thereby to achieving the overall objectives.

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As long as the leaders carry out the analysis logically and systematically, it matters little - from the methodological point of view, at least - whether the decisions finally taken are in favour of the masses or of the élite, of physical education in schools, of football, or of the training of hockey instructors. The important thing is that the leaders will know what they are doing. They will be deciding with complete knowledge of the facts, that is to say, fully realising and weighing up the implications of their decisions. They will know that, by giving priority to a particular objective (or category of objectives) other possible objectives will necessarily have to be sacrificed. Rational choices are conscious choices.

Any co-ordination or harmonisation of policies pursued by different bodies presupposes a common political will. Politico-technical negotiations - perhaps arduous - between the different bodies will be necessary before agreement is reached on a plan of action satisfying the legitimate interests of all parties as far as possible, and at the same time ensuring optimum use of the means available. I shall return to this point in due course.

I should like, in reply to the hasty objections raised from time to time, to state emphatically that I am expressing no opinion one way or the other on the organisational forms of sport (unitary or decentralised, predominantly governmental or non-governmental etc.). Even though I have my own views in the matter, I have never expressed them, for the simple reason that each country is entitled to adopt the structure that suits it best. What is affirmed throughout these pages is the simple truth that a coherent policy presupposes a minimum of co-ordination.

While it is true that co-ordination implies a common will on the part of the bodies concerned, it also implies that the matters concerned are capable of being co-ordinated. This raises the problem of the comparability of policies, which will be discussed under the next point.

c. The adoption of an overall concept permits, thirdly, a pertinent comparison of different policies and their results. Let us suppose, to take an example simplified to the extreme, that four bodies in a given country have decided to adopt a policy of Sport for All: the public authorities are to finance the equipment and facilities and promote physical education in schools, the National Sports Confederation is to organise a publicity campaign and train leaders, the gymnastics and cycling federations are to concern themselves both with the training of leaders and with publicity and also widen access to their clubs. How are we to set about comparing these four policies? How are we to assess the results, the contribution of each? The first necessity will be to define a criterion for comparison.

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This criterion must inevitably be a very broad one, for example, that of the level of sport. Once again, choosing the criterion is obviously just a first step: it will also have to be subjected to logical and systematic analysis (as explained under point (b)) in the light of co-ordination problems. When completed, this analysis will have created a common language, a standardised terminology for all the bodies which took part in it. The concepts and realities which these embody will have become comparable and hence "co-ordinable".

I referred earlier to the difficulties of co-ordinating and harmonising policies at international level, difficulties which are the natural consequence of the divisions and compartments created for national purposes. Thus, at present, international co-operation is usually confined to exchanging information and comparing results and experience. If the participants want more concrete, more substantial results from these exchanges, results more directly usable at national level, they will have to make up their minds to adopt a common language, and, in particular, standardised concepts and terms. The methodology proposed here is intended to contribute to achieving this aim.

d. Fourthly and lastly, if an overall objective is adopted, it is easier to incorporate sports policy into a general policy, for example a socio-cultural one. According to our conception, a sports policy is a system composed of sub-systems (namely the policies conducted by the various bodies responsible for sport). But sports policy, in its turn, is part of a higher complex, a meta-system: this is the overall, for instance socio-cultural, policy.

It is here that we find the answer to the question raised right at the beginning of this chapter. Can a sports policy have aims outside the realm of sport, aims relating to such matters as health, cultural advancement and economic development? A sports policy can obviously have only aims specifically related to sport. It would not be a sports policy otherwise. But in a vaster complex, sport and a sports policy rank as means serving wider objectives, transcending the sphere of sport proper. In o other words, in the overall view taken by a country's leaders, sport will appear primarily as a function, whereas, for those responsible for sports policy, it must be, above all, an end in itself.

The problem of incorporating sports policy into general policy is obviously outside the scope of this study. But if we succeed in clearly defining the main outlines and characteristic features of a sports policy, we will undoubtedly have helped to make its incorporation easier and more effective.

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2. Content of the concept of "level of sport"

The term "level of sport" is used frequently in everyday language, but with different meanings. According to a widely held view, the level of sport is determined by results: scores and records.

Results are undoubtedly an indicator worth taking account of. But it would be unthinkable, despite pressure from a public which is often interested only in victories, to make it a supreme criterion.

First of all, it would be making the level of sport depend on a series of hazardous and arbitrary factors, including luck, on which victory frequently hinges. Secondly, it would be tantamount to acknowledging that, when all is said and done, sport is aimed solely at obtaining outstanding performances by an élite. But sport is more than that: while it is true that an élite will usually produce results, this need not necessarily be the case. There are countries which have a very considerable élite but score few victories.

Even in cases where priority is given to the élite as a tool for achieving performances, the masses are usually catered for to a certain extent, too. A sports leader, who has not meditated on the matter very deeply, will say that the élite depends on the masses, whom he regards as raw material from which to produce champions. It is here that current conceptions need to be radically changed.

The élite does undeniably spring from the masses, though, as we shall see, the law of diminishing returns which governs the ratio between them has to be borne in mind. But let it be stated categorically and emphatically that to encourage the practice of sport by people who do not belong to the élite is not just a means to an end, namely the turning out of champions, but an end in itself.

In other words, we disagree with a large body of opinion in that we believe that the level of sport depends primarily on the number of those who engage in sport, whatever their quality, and only secondly on the sporting élite. This belief is shared by numerous genuine sportsmen, but it is often stifled by the glory and publicity surrounding the élites.

The level of sport and the formation of an élite depend primarily on the extent of the practice of sport. The number of practitioners is all-important, because a nation's sports reputation is directly conditioned by the extent to which sport is practised generally, among its population.

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The élite is the qualitative dimension of the level of sport. Like any cultural activity, sport carries within it an impulsion towards improving and exceeding the results already achieved. Competition is an essential factor in sport and leads to the formation of élites, which, despite possible deviations, are a positive value. To refuse to consider the élite as a constitutent element of the level of sport would be a mistake due, once again, to the failure to take an overall view.

If we accept that the creation of a body of sports practitioners and of a sporting élite are thus the two essential aims of sports policy, the fundamental problem of that policy will be to determine the relation between the two. As this relation embodies both complementary and conflicting aspects, it assumes a dialectic and, hence, a dynamic character. It is the function of the concept "level of sport" to synthesise this complementary and dialectic relation, which is precisely what the mathematical models for decision-making are intended to do. We shall return to this question later and give all the necessary details in Part II.

To effect this synthesis, it is not enough to take account only of those who actually practise sport and of the actual élite, for then the level of sport would be merely a photograph of the existing situation : the higher a country's population would be, the higher the level of sport would be. To define the level of sport in this way, that is, as an absolute value, would serve no purpose and would convey nothing. Comparing levels would be tantamount to comparing population figures.

Thus, if the level of sport is to be a real policy instrument, it must be defined as a relative value, indicating the progress a country (organisation, town ...) has made towards realising its potential. For this purpose, a distinction must be made between the actual and the ideal (or desirable) situation of the two constituent elements, ordinary sports practitioners and the élite.

In other words, it is not sufficient to determine the relation between the two elements of the level of sport in their existing form, that is, between the number of those who actually engage in sport and the size of the existing élite; account must be taken of a second relationship, namely that between the potential (or desirable) number of sports practitioners and an élite corresponding ideally to the number of potential practitioners. If we succeed in determining the overall ratio between these two elements in the level of sport, it will assume a dynamic significance because it will represent the relation between the "real" and the "ideal", that is to say it will contrast the actual situation with the desirable situation. The importance of such a comparison for the framing of a policy is self-evident.

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Thus the level of sport will be seen as a function, not of two, but of four elements, one of which will be the total population of each country. Only in this way will it be possible to use the level of sport as a policy instrument in the full sense of the term, that is to say, as a neutral but dynamic tool, which is universally applicable and independent of considerations of time or place. In this way, too, it becomes possible to compare objectively the levels reached by the various countries (regions, towns, organisations etc), besides which, such comparisons then become meaningful.

3. Analysis of the four constituents of the "level of sport": problems and possible solutions

As we have just seen, the level of sport is the relation between the actual and the ideal number of ordinary sports practitioners and of the sporting élite respectively. Let us analyse these four constituent elements.

The first, that is to say the number of ordinary practitioners, raises various problems. To start with: what activities are to be taken into account and what degree of activity is required for someone to be considered as a "practitioner"?

The first question necessitates a clarification of the concept of sport. What activities, if any, need to be eliminated, even if, administratively, they may be considered as sport? I am thinking of games for which competitions are held, but which do not demand any expenditure of physical energy: for example, chess. Then the question arises whether activities involving no competitive element, such as morning gymnastics or the Sunday walk, can be considered as sport.

It is not for me to answer these questions. The various bodies concerned will have to conclude an agreement establishing a uniform statistical system. I nevertheless have my own view on the subject: in my opinion, non-physical activities, like chess, should be excluded from the concept of sport. Moreover, I consider that the criterion of competition, in the broadest sense, should be observed in order to distinguish sport from activities designed to maintain physical fitness.

Then it will remain to determine the number of hours of sports practice required for someone to be considered as a "practitioner". To my mind, the criterion should be a modest one, but continuity should be taken into account. The relatively intense practice of sport during holidays only should be regarded as insufficient: practice should be more or less continuous throughout the year.

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Here again, as in the previous case, and indeed in that of all the problems arising within the scope of this study, agreement will have to be reached between the bodies concerned. In my opinion, the minimum to be demanded should be two hours' practice a week. We shall go into the matter in greater detail in Part III, relating to statistics, when we shall consider, among other things, the problem of estimating the number of those who practise sport - a difficult task, owing to the fact that few of them belong to clubs or associations.

The second element, the actual élite, raises another problem: that of determining who belongs to the élite of a country, a region or a locality. Then a distinction has to be drawn between those sports in which performances are measurable and the others. The first type - practically all the individual sports - raise no particular difficulties. The élite is composed of those who reach a certain standard of performance. This is the method used fairly frequently nowadays for selection for competitions. The definition of "élites", whether national, regional or local, thus presents no major difficulties. The national élite is defined by world records, the regional élite by national records and the local élite by regional records.

Determining the élite is more difficult in the case of sports in which performance is not measurable and in team sports. A starting-point might be the individual rating of players, which is common to all sports. As in the case of performances, a national, regional or local register might be kept - as is invariably done in practice - of outstanding sportsmen. The rough-and-ready and more or less automatic way of deciding who are the élite in sports of this kind does not really prevent quantitative estimates, as the concept of "élite" always relates to individuals, in any case, and never to groups or teams. The quality of a team is a matter of selection. That is a technical problem outside the scope of this general survey; we shall return to it later in the chapter dealing with development factors.

Where the third element, the "potential practitioners", are concerned, the first necessity is to fix age-limits, for it is at the two extremities of the age pyramid that elimination must take place. My personal view is that the practice of sport by young persons under the age of 14, intense though it may be, must be considered as physical education. We shall return to this question in the subsequent chapters. To my mind, it would be a mistake to include the under-fourteens for the purposes of

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defining the level of sport. Perhaps the age-limit should be even higher, although certain sports like swimming are producing extraordinarily precocious champions. If the under-fourteens are to be excluded from the number of potential sports practitioners, they will, obviously, also have to be excluded from the number of actual practitioners.

The upper limit also creates a problem. If two hours' competitive activity a week is to be the criterion, then 70 years must be regarded as the upper age-limit. This obviously does not mean that certain persons over that age are not to be regarded as real sportsmen, but simply that their number is statistically negligible.

No account need be taken, for the purposes of a general assessment, of factors such as sex, occupation, geographical background, or the form of the demographic pyramid; but these have to be taken into consideration when it comes to determining the "sport situation" (see following chapter).

As for the ideal élite, it should be noted, first, that there is a total absence of empirical studies on the optimum masses/élite ratio in sport. This does not constitute an insurmountable obstacle, however, for one could begin by envisaging a fairly high ceiling, fairly remote from reality, and specifying later, in the light of experience, what is to be regarded as an "ideal" élite.

Secondly, the "ideal" élite is to be distinguished from an élite which we might describe as "proportional". The first is determined in relation to the potential practitioners: it is the élite which would correspond ideally to the number of potential practitioners. By contrast, the "proportional" élite is determined in relation to the number of actual practitioners: this is the élite which should exist, given the number of actual practitioners. This concept of "proportional" élite is useful because it reveals any imbalance (deficit or excess) in the existing élite.

In other words, three élites are to be distinguished: the real, the proportional and the ideal. It is only the "real" and the "ideal" élites that concern us in determining the level of sport. But the "proportional" élite will help us in defining the other two élites and in ascertaining their influence on the figure which will denote the level of sport.

The proportional élite being the ratio between the number of ordinary sports practitioners and the number of champions which there should be, account must be taken of the variations in that ratio according to the law of diminishing returns. Normally the élite will tend to increase rapidly up to an inflexion point,

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at which it will start, in relative terms, to diminish. It is difficult, at the moment, to say what the inflexion point is in sport; there can be no doubt, however, that the ideal élite, because it corresponds to the number of potential practitioners, is to be determined according to the law of diminishing returns. It will therefore be proportionally less than the élite which corresponds to the number of actual sports practitioners.

The ratio between the four elements will have to be weighted in the light of the foregoing factors, because it is possible, in certain cases, that the actual élite may be larger than the proportional one. But, as the latter (according to the law of diminishing returns) is proportionally greater than the ideal élite, this fact must be borne in mind in order to prevent the figure representing the level of sport from being distorted.

This problem will be dealt with in Part II of the study in connection with the econometric analysis. In view of what has just been said concerning diminishing returns, a corrective index will have to be applied in order to avoid unrealistic results.

4. Mathematical formulation problems

The mathematical relation between these four elements will be discussed in detail in Part II of this study, dealing with econometrics. As a rule, as I have already stated at several Council of Europe meetings, (the first time, in April 1970, at the Fifth Consultation of NGOs), this relation might be multiplicative or divisive: multiplicative to express the relations existing respectively between the elements constituting reality and the ideal situation, divisive to express the relation between the "actual" and the "ideal".

For a long time I thought that the simplest formula might be:

$$LS = \frac{\text{No. of actual practitioners} \times \text{No. of actual élite}}{\text{No. of potential practitioners} \times \text{No. of ideal élite}}$$

But the econometric study in Part II shows that such a formula (which, in any event, could be no more than a working hypothesis) has quite a number of drawbacks. I therefore decided to abandon the above formula and adopt instead that proposed by Mr Juan de Dios Garcia Martinez in Part II, which is based on the theorem of Pythagoras (1). As regards the weighting of the

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(1) Secretariat note: Mr Castejon already announced in document CCC/EES (72) 65, pages 5 and 10, that he was abandoning the initial formula.

various elements - an operation which is necessary if distorted results are to be avoided - I would refer the reader, once again, to the econometric study.

In any event, the working out of the formula is a mathematical operation. Only mathematicians can tell us whether it is possible to find an even better formula than the one based on the theorem of Pythagoras.

The really important thing is that the expression of the difference between reality and the ideal should lead us to a situation in which we can apprehend the real and the ideal simultaneously. It is in this way that the concept of the level of sport takes on a dynamic significance, implying the existence of some sort of sports policy, coherent or incoherent, conscious or unconscious, but capable of being adjusted to bring the "real" closer to the "ideal". As I said earlier, I believe that the same principles could be applied in dealing with the problem of quantifying objectives in cultural policy.

The first conclusions that can be drawn from the foregoing are the following:

Determining the level of sport enables us, in the first place, to define sport from a politico-administrative point of view. By accepting criteria of this kind (that is to say, those I am proposing or any other similar ones) we shall arrive at a definition which allows comparisons.

Secondly, it thus becomes possible to quantify the aims and options of sports policy. The crucial problem of any cultural policy, namely the choice: masses versus élite, is brought right to the forefront.

Thirdly, it becomes possible, in this way, to determine the medium-term and long-term objectives and to define the relevant policies.

Fourthly, the concept of "level of sport" will make it possible to analyse the "sport situation" and thus devise a policy which, with the aid of the "development factors", will produce the desired level of sport.

Fifthly, and lastly, this quantification will enable objective limits to be set to the alternative: masses versus élite, in accordance with the law of diminishing returns, and permit a substitute to be found for an apparently successful short-term policy which, in the long term, is turning out to be harmful.

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CHAPTER II

THE SPORT SITUATION

The concept "sport situation" which is the subject of this chapter, has a double significance for sports policy. On the one hand, the sport situation is the resultant of a given level of sport; on the other, it should form the basis of any policy aimed at improving the level of sport, that is to say, at transforming reality by bringing the "development factors" into play.

Moreover, this concept is the necessary complement of the concept of "level of sport", and this for several reasons.

One is that the level of sport gives us only a first, general idea of the state of sport. It is necessary, in order to account for this level being what it is, to examine it in its context, for it is merely one factor among many, and without these other factors, the figures representing the level of sport would not acquire their real, specific significance. We shall see that the four elements of the level of sport are also elements of the sport situation. Hence the need to define the relationships between these elements and the realities constituting the sport situation.

If one compares the concepts "level of sport" and "sport situation", the latter appears to represent an analytical and functional view of the world of sport, the former an overall view. In other words, the level of sport expresses the whole masses versus élite relationship, in which reality is contrasted with the ideal objective, whereas the sport situation appears as the aggregate of the manifold technico-sport relationships existing, firstly, between the various basic elements of sport and, secondly, between those elements and a series of circumstances extraneous to sport.

It is extremely important to know what the sport situation is, for the fundamental decisions concerning sports policy must be taken in the light of the actual situation and its particular characteristics. That is why an analysis of the structure of the sport situation, for the purpose of comparing the "real" with the "ideal", is an essential preliminary to any study of the factors for development.

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1. General definition of the concept

The "sport situation", within the meaning of this study, can be defined in relation to two different series of realities.

It is composed, first of all, of a series of realities which I shall call the "specific sports elements" : these may be persons (ordinary sports practitioners, instructors, leading officials etc), things (installations, facilities) or organisations (clubs, federations etc). These specific sports elements are characterised by the fact that they can be controlled or influenced by the policy-makers so as to contribute directly to the development of sport.

The sport situation is influenced, in the second place, by a whole series of circumstances extraneous to sport, including the economic and geographic conditions of the country, social customs and beliefs, the anatomical and physiological characteristics of the population, and so forth. This second category might be described as "extra-sports elements". They constitute what I call the "conditioning framework". Unlike the specific sports elements, the extra-sports elements appear more or less constant or independent. In any event, sports policy-makers cannot change them in the short term, for they are outside their competence and beyond their control, but they have to take account of them in their policy.

It is the interplay of the technical and quantitative relations between these various sports elements and extra-sports elements which determines the sport situation. The quality of that situation is determined by comparing the real with the ideal relations. In other words, in order to determine whether the real situation is satisfactory, balanced and functional, an ideal, or at least desirable, value has to be fixed for each element, as in the case of the level of sport.

In the chapter dealing with the "development factors" an attempt will be made to describe the mechanisms whereby the transition can be made from a given situation to a desired future situation. The "development factors" therefore play a dynamic role, whilst the sport situation and the elements composing it are static. It is important to underline that fact. The concept "sport situation" is like a photograph in that it tries to capture reality at a given moment. Comparison with past, future or ideal situations does not affect this static quallty: each of the situations compared is the crystallistation of an actual state which is constantly changing.

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2. Specific sports elements : description

There are two errors to be avoided in describing a situation: firstly, that of giving too many details, and secondly, that of being too general. We are confronted with this problem here. We are forced to make a choice from among the many realities that can be considered as elements of the sport situation. Such a choice will, to some extent, be an arbitrary one, and it will always be possible to challenge it on one ground or another.

The criterion I have applied in selecting these elements is their significance for the level of sport and their relative independence. The elements chosen seem to me more than sufficient for the general model proposed here. The analysis could, of course, be carried even further by making sub-divisions of each element.

The specific sports elements may be classed in three major categories:

a. basic elements ;

b. directional and organisational elements ;

c. instrumental elements.

Group (a) may be sub-divided into primary elements : the number of ordinary sports practitioners and the number of the élite, and complementary elements: the number of pupils receiving physical training and the number of hours of sports practice.

Group (b) comprises the sports organisations, leading officials and professional administrators.

The instrumental elements in group (c) can also be sub-divided into material elements and human elements : the former include the area of the installations and the existing sports facilities and equipment, the latter comprise teachers of physical education, instructors, coaches, umpires and judges and the medical personnel.

After this enumeration-classification, the next step is to define each of the elements considered.

a. Basic elements

With regard to the number of ordinary sports practitioners and the number of the élite, I would refer to what has already been said on the subject in connection with the level of sport.

The two complementary basic elements, however (pupils receiving physical education and the number of hours of sports practice), call for some clarification. First of all, bearing

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in mind what was said in the preceding chapter as regards determining the number of ordinary practitioners, pupils receiving physical training are to be regarded as belonging to the under-14 category. Secondly, I consider this element as a "basic" one because it tells us the proportion of young people who do not make the transition from the compulsory to the voluntary activity, that is to say, from physical training to sport. The fact that there are physical-training pupils over the age of 14 is of little relevance to ascertaining the sport situation. If, by the age of 14, a child has not acquired the habit of physical exercise which is conducive to the practice of sport, he is hardly likely to acquire it later.

The number of hours of sports practice is the indicator for gauging the average activity of practitioners and, consequently, the degree of intensity.

A more detailed analysis is, of course, possible. As regards ordinary practitioners, classification by age, sex, occupation, sports engaged in, and place of residence would be highly significant. The same applies in the case of the élite. Where physical education pupils and young practitioners are concerned, it would be interesting, in addition to the other data, to know the number of those who have completed their basic schooling, for this might shed light on certain aspects of the youth crisis and on the effects of entry into occupational life or of the pursuit of higher studies. It would be interesting, too, to have separate statistics of the number of hours spent by the élite and by ordinary practitioners on sports practice. But, as stated earlier, these details are not indispensable for a general model.

b. Directional and organisational elements

Some clarification is necessary here. By sports organisations I mean all bodies concerned with sporting activities, whether their aims relate exclusively to sport or not. Their existence must be taken into account. As a rule, however, it is only their number that we need to know. As in the case of the basic elements, possible significant sub-divisions soon become apparent, the most important, to my mind, being those relating to the public or private character of the bodies concerned, to their geographical scope and to their impact on sport.

By "leading officials" I mean persons who (sometimes as patrons) assume essentially honorary functions of a directional or managerial and non-technical nature. The length of period during which such functions are exercised might be another significant element of information.

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This group also includes all those who fulfil the same kind of functions on a professional basis, and whom I call "administrators". Additional data might concern the actual duties performed, or their official or private character.

In reality, these three elements are, of course, closely interrelated. A breakdown is necessary in order to ascertain the importance of organised sport in a specific situation, together with its functional qualities or defects.

c. Instrumental elements

This third group comprises, first of all, the material elements: sports installations, facilities and equipment for the practice of sport.

The important thing to know is the total area (square metres) covered by the existing installations. An inventory might then be compiled showing the areas allocated respectively for sport for the masses, for the élite, and for the different branches of sport. The area indicated will be that set aside for the practice of sport and not that reserved for the spectators, although the latter element of information would also be useful.

Where sports equipment is concerned, it is difficult to quantify it on account of its heterogeneous character. Estimates might, however, be made of any shortages and of the total value of the equipment available, a distinction being drawn between the equipment placed at the disposal of ordinary practitioners and that provided for the élite.

Among the human elements, there are, first of all, the teachers of physical training: these are the staff who are in charge of the physical training of pupils in public or private educational establishments.

Instructors, on the other hand, are responsible for direct initiation in sport. The primary aim of the instructor is to encourage possible practitioners to engage in sport, whatever their age, and provide them with elementary training. As a rule, instructors are not specialists in a single sport. It would be interesting to know the distribution of instructors among the various sports.

Thirdly, there are the coaches. These are specialised, to some extent, and possess technical knowledge. It is the task of the coach to raise the technical standard of those who practise a particular sport already. It is sometimes difficult to draw clear distinctions between the various categories of coaches. One could, however, distinguish between those who usually work with ordinary sports practitioners, and those who train the élite.

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Fourthly, there are the umpires and the judges - a rather heterogeneous category owing to the diversity of sports. Their functions (administration of games, time-keeping and evaluating performances) define them.

Lastly, there are the medical personnel, comprising doctors and their auxiliary staff. A distinction must of course be drawn between the doctor and the auxiliary. A further distinction might be made between medical care for the ordinary sports practitioner and that for the élite.

These distinctions become meaningful in the context of a general survey. The fact is that, in numerous cases, functions are interchangeable or several may be performed by one and the same person.

Our aim here has been merely to describe rather than define the elements. Fuller details will be given in Part III relating to statistics.

3. The "specific sports elements" : interrelations

The elements described above are, of course, parts of a whole, of a single structure. It is only the process of abstraction necessary for their classification that enables us to consider them as independent. In any event, their very classification into basic elements, directional, organisational and instrumental elements, reveals the existence of interrelations. It is these interrelations that it is important to ascertain.

A priori, we can distinguish a whole network of interrelations between the various elements. The main ones appear to me to be the following:

A. Functional interrelations:

- Ordinary practitioners:	largely determines the élite
- Elite:	has a strong influence on the ordinary practitioners
- Number of hours' practice:	has an influence on ordinary practitioners and on the élite; determines the quality (or "intensity") of sport in the level of sport
- SPE pupils:	direct interrelation with ordinary practitioners; indirect with the élite
- Organisation: (existence of clubs, etc):	largely determines ordinary practitioners and élite; close interrelation with direction and management

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- Direction:	close interrelation with ordinary practitioners, elite, organisation, management
- Management/ Administration:	cf. Direction

B. Technico-sports interrelations:

- Installations:	largely determines élite and ordinary practitioners (the latter to a lesser extent: cf. eg outdoor activities)
- Sports equipment:	affects ordinary practitioners, elite, installations to varying degrees
- SPE teachers:	direct interrelation with SPE pupils, indirect relation with ordinary practitioners and élite; relations with installations, organisation, instructors and coaches
- Instructors:	direct interrelation with ordinary practitioners; relations with organisation, installations, SPE teachers, coaches
- Coaches:	close interrelation with ordinary practitioners, elite; other relations cf. instructors
- Medical personnel:	general interrelations with all the other elements
- Umpires and judges:	close interrelation with organisation.

The foregoing is a rapid sketch of the principal interrelations that can be identified at first sight. A more detailed analysis would obviously show different degrees of relations (first, second, third degree etc) between the basic elements and the other elements.

Defining a rational sports policy will, as explained earlier, entail establishing quantitative relations between the various elements. The first step will naturally be to determine the quantitative relations between the elements of the actual situation. For that purpose inventories will be necessary. The second step will be to establish ideal values for each element so that the actual situation can be compared with an ideal, or at least desirable, situation.

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How does one set about fixing ideal values? Only intensive empirical studies and a thorough analysis of existing functions and dysfunctions can provide the answer. Thereafter, detailed discussions, perhaps negotiations, based on these studies, will have to be entered into by the representatives of the various bodies concerned, and there may be a large number of those. It is only by agreement among all the parties involved that desirable values, that is to say short- or medium-term political objectives, can be established. These values will inevitably be something less than the long-term ideal: policy is the art of the possible.

The present study being a methodological one, it is not for me to say what these ideal values might be. Only by studying each individual situation (that of a given country, organisation, town etc) on its own merits will it be possible to determine the ideal values best suited to it. This will necessitate intensive studies by specialists. Still less do I presume to recommend desirable values, for that is strictly a matter of policy and I have no wish to usurp the functions of the experts or decision-makers.

However, for purely indicative purposes, and guided by my own experience and by studies I have perused, I venture to mention a few values which, I consider, might be something approaching the ideal. The reason why I underline the approximate and personal nature of these figures is that it was alleged at certain meetings held at the Council of Europe, that I was in fact proposing values. This is not so.

With these reservations, I offer my personal views on the ideal relations, expressed as percentages.

The ideal élite-ordinary practioners' ratio in any country might be put at 4 per 10,000. The effect of the élite in increasing the number of ordinary practioners seems to me difficult to estimate for the time-being.

The number of hours' practice might be estimated at an average of 4 hours a week for ordinary practioners and 25 hours a week for the élite.

The ideal ratio between ordinary young practitioners and the number of school-pupils receiving physical training is, in my view, 80%.

As to the quantitative relations between the organisational, directional and managerial elements and the basic elements, I hesitate to express an opinion. The relation is very difficult to estimate owing to wide differences in the size of organisations. Allowing for the fact that very small organisations may be

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inefficient and too large ones dangerous because they eliminate competition, it does, nevertheless, seem possible to arrive at a figure that might be considered as ideal. This will necessitate a structural analysis and not a purely quantitative one, although it is feasible, by means of a structural analysis, to work out an ideal ratio between large, medium and small organisations.

Relatively speaking, it is easier to advance a figure in the case of leading officials. In general terms, the optimum ratio to ordinary practitioners might be put at 5%. The ratio to the number of organisations might fluctuate around an average of 15 per organisation.

In view of the shortage of administrators in most of the small organisations, the figure for this category of personnel might be put at 75% of the leading officials.

Where sports installations are concerned, the question of the desirable area per person has been carefully studied in several countries. Below is a summary comparative table of the findings:

Czechoslovakia	6 units/inhabitant
Federal Republic of Germany	5 units/inhabitant
Hungary	4.5 units/inhabitant
France	3.5 units/inhabitant
Italy	2.5 units/inhabitant
Spain	1 unit /inhabitant

The heterogeneous character of sports facilities and equipment, which may be individual or collective, rules out any but a very rough estimate of the ratio to installations and organisations. I have been unable to find any uniform unit of measurement.

The relations between the human instrumental elements are easier to express in quantitative terms. The number of physical training teachers might be put at 1 for every 20 pupils, the number of instructors at 1 for every 4 sports practitioners. It is more difficult to quote a figure for coaches, owing to the immense range of sports and of technical standards. However, as the vast majority of ordinary practitioners do not have recourse to the services of a coach and, indeed, have no reason to do so, the number might be put at 2% in the case of ordinary practitioners and 10% for the élite.

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The optimum proportion of medical personnel to sportsmen, masses and élite combined might be put at around 3%.

Lastly, despite the differences between the various sports, and the fact that occasional referees and judges are often called in, the number of referees and judges might be put at 2%.

4. The "extra-sports elements" (conditioning framework)

At the beginning of this chapter it was stated that the sport situation is determined by two categories of elements : "specific sports elements" and "extra-sports elements". The latter appear as a set of circumstances belonging to a given structure, which have the effect of promoting or hindering the development of sport. I call this set of circumstances the "conditioning framework".

There are two errors to be avoided where the extra-sports elements are concerned: the first would be to consider them as sports elements or what, in the next chapter, we shall call development factors; the second would be to disregard them on the ground that they are outside the control of sport. They cannot be ignored because they form the factual context into which the sports policy will be fitted. The effectiveness of that policy and its adaptability to reality will depend largely on the conditioning framework.

In my opinion, the main extra-sports elements are thethe following: demographic conditions; the physiological and anatomical characteristics of the population; climatic and geographical conditions; economic conditions; sociological conditions.

Demography is extraordinarily important for sport. In the first place, the population is, as it were, the "raw material" on which sports policy acts. Population figures are basic data for the framing of that policy. But it is not sufficient to know the total population: it is necessary also to know how the population is distributed by age and sex, as well as geographically (town or country). Such data are indispensable to the working out of any policy for the development of sport. Those responsible for a policy for the élite must also know, given these conditions, what the real possibilities are. The same applies to the policy for physical training in schools. The projection of current demographic trends into the future will assist the framing of a long-term policy in all these fields.

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Secondly, there are the physiological and anatomical characteristics of the population. It is important to know the average height, the average weight etc in order to promote the most suitable sports for the population concerned. In the case both of a policy to promote Sport for All and of a policy for the élite, these data are indispensable for decisions concerning the types of installation required, the training of instructors and coaches, and of teachers of physical education, and so on.

Thirdly, there are the climatic and geographic conditions. The number of hours of daylight conditions the planning of installations, according to whether or not artificial lighting is necessary. On the distribution of the annual rainfall and snowfall depends, to a large extent, the percentage of covered installations that may be necessary. Similarly, weather conditions may limit the number of hours of practice. On the other hand, snow, whether combined with a mountainous landscape or not, permits the extensive practice of certain winter sports. Lastly, aquatic sports, which are many and varied, are obviously conditioned by the situation of sea or inland waters.

With regard to economic conditions, I think first of all of the standard of living of the population. While the living standard is not decisive - for account must be taken of the political system in force and of its motivations - it nevertheless strongly influences the amount of funds available for sport. But the living standard also determines the leisure activities of the population and, consequently, the possibilities of developing sport, the hours of sports practice, the types of sports engaged in, the installations and clubs and, in general, the entire sports policy. Action which is not based on a thorough knowledge of the possibilities which the living standard of the population allows, is likely to yield unsatisfactory results.

Lastly, there is what might be called, according to the Ortega terminology, the "prevailing social laws and customs". By this I mean not only what might be considered as the beliefs and social psychology of the population, but also the institutions and structure of the society considered and of its constituent groups. For example, there is the positive or negative image of sport formed by that society, the political institutional system, working hours and school hours, feeding habits, the more or less marked stratification into social classes, and so forth. The existing social conditions must form the basis of any planning, whether it is concerned with sport promotion, installations or other aspects.

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Another aspect to be taken into account is what might be termed the "ecology of sport". By this I mean the place occupied by sport in the whole complex of cultural phenomena, that is to say its connections or antagonisms in relation to art, intellectual life, health, education, tourism, work and innumerable other present-day social forces.

It appears to me to be very difficult to make any quantitative assessment of the conditioning framework, composed as it is of a set of variables forming such a dense network that they act upon and influence one another. These must undoubtedly be taken into consideration in any decisions relating to sports policy, but a quantitative estimate seems to me to be impossible for the time-being.

5. Conclusions

The sport situation must form the basis of any sports policy.

An analysis of the relations between the elements of the actual situation, and a comparison between the actual and the ideal situation shed light on the causes of the quantitative dysfunctions. In addition, an analysis must be made of a series of elements which are not measurable but must nevertheless be taken into account.

It is the existence of imbalances between the various elements that explains the bottlenecks which frequently impede the efficient functioning of one or more elements.

Even where there is no intention of changing the existing level of sport, an analysis of the actual situation may show what technical adjustments are needed in order to establish a better balance between the various elements.

These analyses and comparisons must be completed by an assessment of the conditioning framework in relation to the specific sports elements.

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CHAPTER III

DEVELOPMENT FACTORS

This chapter deals with the transition from the analytical to the operational stage, from study to action. In it are expounded the methods for working out a rational sports policy.

Adopting a policy means making a choice between several possible alternative policies. Because of the numerous combinations they permit, the ratios between ordinary practitioners and the élite, for example, offer a whole range of possible policies. Consequently, any action will always have its origin in a prior policy decision. But once the initial policy decision has been made, the implementing process may be rationalised, and it is this we shall try to demonstrate here.

But there is more to it than that. I consider that a more thorough knowledge of the sport situation will show that the alternatives are much less numerous than might appear at first sight. A rigorous scientific analysis makes policy less dependent on the discernment of decision-makers. The laws of interdependence between the masses and the élite and the constraints of the sport situation do not leave a big margin for rational decisions.

In short, sports policy might be defined as a set of measures aimed at converting the present situation into another which represents the objective to be achieved. This will involve fixing the level of sport to be attained, not only in purely quantitative terms, but also qualitatively, i.e. a certain type of level is to be chosen, favouring ordinary pratitioners or the élite, as the case may be.

Working out a policy is not simply a matter of analysing the sport situation and determining the level of sport to be attained. Two other data must be known: the amount of funds and time available for carrying through that policy. With the aid of these four data, it is possible to plan how the development factors can best be combined. But before we start considering these factors, some clarification is needed of the general approach to the working out of a sports policy.

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The first question that arises is the following: given the sport situation, the time allotted for implementing the policy, and the budget available, what level of sport can be set as the target? The second question completes the first. It concerns methods and may be worded as follows: given the situation, the time-schedule, the money and the target sport-level, how is that target to be reached? The two questions may appear to be separate, but are actually closely linked. It is impossible to fix a target sport-level without considering the cost; thus it is only by successive adjustments that an accessible level of sport can be determined, and this presupposes an answer to the second question. Surveys among all the bodies concerned will be a necessary preliminary to determining the objective to be achieved and working out the details of the development programme. The latter process will no doubt frequently show that the target sport-level needs rectifying.

Lastly, it should be emphasised that, where the organisation of sport in a country lacks coherence, efforts to define an overall sports policy may run up against difficulties. Decentralisation is not an obstacle in itself, provided there is sufficient co-ordination for the facts of the situation to be known and a common objective to be fixed, thereby permitting some measure of integration of the policies of the various organisations. But in the absence of that minimum of co-ordination, it is virtually impossible to arrive at a clear assessment from the resulting conglomerate of juxtaposed policies. Thus, the operation of the system expounded here presupposes a minimum of co-ordination.

1. DEVELOPMENT FACTORS: DEFINITION AND CLASSIFICATION

Any change in an existing situation implies action. The sport situation is composed of elements which are static in the sense that they constitute an actual state of things, but do not alter it unless they trigger off a series of actions. For that reason, I draw a sharp distinction between "development factors" and "elements". The development factors have a dynamic significance in that they relate to activities which work a change in the static elements.

The factors for development could be defined as all those activities, which, combined in programmes, have the effect of developing the various elements of the situation and thereby improving the existing level of sport, directly or indirectly. This definition is not foolproof, however, for though it distinguishes between the factors and the elements, it does not bring out the specifically sectorial character which differentiates each factor from the others.

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In my opinion, each development factor can be defined in terms of the specific aims of the set of activities to which it relates. To my mind, the factors to be considered are the following:

1. promotion
2. physical education
3. improvement of techniques
4. competitions
5. training of physical education teachers
6. training of instructors
7. training of coaches
8. facilities for ordinary practitioners
9. facilities for the élite
10. sports organisation and structures.

Let us look at the list in detail.

Promotion consists of a series of publicity (mass communication techniques, public relations etc) and sports activities directly aimed at initiating in sport persons who have not so far engaged in any.

Physical education is an end in itself, but it also fulfils an important function as a factor for improving the level of sport. As such, it appears as a set of educational activities whose purpose is to cultivate both a taste for and the habit of regular physical exercise. It is, in short, a specific method of promoting sport indirectly; I say indirectly, because the aim is not so much sport as physical fitness.

Training, on the other hand, enables sports practitioners to increase their technical skill. What characterises this factor is that it acts on average technical standards so as to raise them to the maximum; it is of particular significance to ordinary practitioners with special aptitudes, who wish to improve their techniques. The activities embraced by this factor are so diverse that it seems difficult to list them exhaustively.

The organisation of competitions is so obvious a factor that there is a risk of its being passed over in silence. It has a specific function. Without competitions, sport would virtually lose all meaning. Thus the more or less formal organisation of competitions is necessary. Ordinary practitioners like the élite, must have their championships, which commit them

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to a certain continuity of practice. This factor is obviously much more important for the élite than for ordinary practitioners; but it is particularly important for practitioners who have attained a certain standard and is indispensable for those who aspire to joining the élite.

The training of physical education teachers, instructors and coaches are three distinct factors for development. Each is composed of all the specific activities necessary for the training of these three categories. What differentiates the three factors is that they serve different purposes, but, as we shall see, they must be classed in one and the same group.

The two factors concerning facilities (for ordinary practitioners, and for the élite) relate to the building of new installations and the maintenance and improvement of existing ones. The term "installations" here implies the sports facilities and equipment which they must incorporate. It may be difficult, in practice, to make a distinction between the installations intended for ordinary practitioners and those intended for the élite, for there is often a whole gamut of installations ranging from those reserved for the élite to those intended exclusively for the masses. The main drawback lies in the fact that the existing facilities are not always assigned to one specific purpose, but tend to be used for all types of sports. Despite these difficulties, it is nevertheless possible, in most cases, to say whether particular facilities are designed primarily for the use of the élite or of ordinary practitioners. In any event, it seems highly desirable to clearly assign the various facilities to specific uses; this would help identify instances where existing facilities are being used for purposes other than those for which they were originally intended.

Lastly, the factor "sports organisation and structures" comprises all those activities concerned with organising sport and creating appropriate structures or adapting existing ones. Without this factor, it would be difficult for the others to enter into action.

Let us now consider briefly how each factor brings the various elements into play.

In the case of promotional activities, these elements will include: instructors, certain types of installations and certain initiatory competitions; moreover, specific organisational structures will undoubtedly be necessary if the practice of sport is to be generalised.

Physical education will naturally bring the elements: physical education teachers and school sports installations and organisations into play.

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Improvement of techniques presupposes the existence of coaches, installations for the élite, specific organisational structures etc.

In the organisation of competitions almost all the elements enter into play. Indeed, they all enter into play more or less directly in the case of each factor, but most obviously in that of competitions.

The three training factors directly concern the elements: leading officals and administrators, together with the instructors, teachers and coaches already available.

In the two factors relating to facilities, the elements of the sport situation, with the exception of the existing installations, serve information purposes only.

Lastly, the leading officials and administrators, as well as the various organisations (whether of a specifically sports character or not), which are connected with sport and are already in existence, must be taken into consideration under the heading "organisation".

After this description, the next step is to classify the factors. The purpose of this classification, far from being theoretical, is to show how the various factors influence the level of sport; this influence will be the main criterion for classification. The same general criterion will be applied in two other classifications corresponding to the two dimensions of the level of sport: ordinary practitioners and élite.

According to this general criterion, the factors may be classed in three main groups:

a. factors directly affecting the level of sport;

b. instrumental factors exerting an indirect influence;

c. necessary factors exerting an indirect influence.

Group (a) comprises promotion, improvement of techniques and physical education. These three factors affect the level of sport directly by increasing the number of practitioners and their technical standard. The direct influence of the physical education factor is not always apparent over a short period, especially in the case of the élite, but over the longer term its effect on standards is undeniable.

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Group (b) comprises the following factors: teachers, coaches, instructors, facilities (for ordinary practitioners and the élite alike) and organisation. These means are all essential to attaining a specific level of sport, but none is capable alone, ie without the aid of the three factors in the first group, of altering that level - hence the term "instrumental" factors.

Lastly, group (c) represents the factor "organisation of competitions". Competititon is the food of sport, with which it might be said to be consubstantial. But while this is undeniable, it is nonetheless certain that competititon exercises no direct influence on the level of sport; for ordinary practitioners and the élite alike, competition is essentially a form of sports activity. It is true that watching a competition is an incentive to some to go and practise the sport themselves, but its effect nevertheless remains indirect. Some kinds of competititons do not produce any practitioners at all, but only spectators - in certain social milieux at least. Thus competitions which serve to promote sport must be distinguished from those which do not. This is sometimes a difficult distinction to make; but the principle that competition of any kind should be considered as a means of promoting sport needs to be affirmed.

Classification according to the second criterion produces two major groups, and a third one which might be called "neutral". The first group is that of the factors which create ordinary practitioners, namely promotion, physical education (short- and medium-term), training of teachers and instructors, and facilities in general.

The second group creates élites. It is composed of the following factors: improvement of techniques, training of coaches, facilities for the élite, and long-term physical education.

The third group, which I have described as neutral, because it can be made to serve either dimension of the level of sport, comprises the factors: competition and sports organisation and structures.

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2. FACTORS, PROGRAMMES AND BUDGETS

Analysing the existing situation and defining the factors capable of transforming a given situation into a "target" situation will remain purely academic exercises as long as their purpose is not the drawing up of concrete programme, provided with the necessary financial backing. In other words, each factor calls for a programme of action and development, bearing on the specifically sports elements, but allowing for the particular circumstances of the conditioning framework, determining the execution schedule, and assessing the cost of the various operations.

The two last-mentioned operations are indispensable if the programme is to be successfully incorporated into the context of short-, medium and long-term planning. The programme-budget method appears to be the most appropriate for this purpose. It should be possible, by combining this technique with the classification of factors in the order of their influence on the level of sport, to achieve maximum efficiency, both in sports and economic terms; in short, the best possible return on investments. Recourse to mathematical models and simulation will permit a rational choice between the various alternatives and the establishment of a programme ensuring maximum returns for a minimum of expenditure.

Once the development programmes have been drawn up for the various factors, they must be co-ordinated and incorporated into a general plan; this is indispensable if imbalances, dysfunction and bottlenecks in the sport situation are to be avoided. In other words, once the policy decisions have been taken and the desirable target sport-level determined, programming will become a purely technical exercise. The important thing will be to proceed systematically and logically.

As already stated, application of the present methodology presupposes a minimum of co-ordination between the various sports organisations and, in particular, the existence of a body to study the basic data available, and, in the light of these data, to determine the broad lines for the future: general level to be attained, the main aims etc; in a word, a body to make the necessary choices and decisions.

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Implementation of the development programmes and, in particular, of the various projects embodied in them, will obviously have to be entrusted to the existing sports organisations, private or public, depending on the sports structure of each country. The ideal approach, to my mind, would be for the co-ordinating body to broadly outline a tentative plan. This outline would be communicated to the sports organisations concerned as a guide for the working out of specific projects. These would be transmitted, along with comments, to the co-ordinating body which would decide either to incorporate the specific projects in the master plan, or to adjust the latter.

Any policy aimed at bringing about a rapid change in the level of sport will entail giving priority, in the allocation of funds, to programmes centred on those factors which exert a direct influence. However, owing to the interdependence of the various elements and the structural coherence of the sport situation, as demonstrated in the present study, such a policy may often turn out to be illusory. Investments in instrumental factors will always be necessary if one wants to avoid expenditure that brings no return for the benefit of sport.

I would also mention, in this connection, the all too frequently observed hypertrophy of the "competitions" factor. Experience shows that competitions absorb a very high percentage of the funds set aside for sport; yet, as we have seen, their effects on the level of sport are only indirect. There can be no doubt that competition is indispensable, but the expenditure entailed must be kept within limits to make sure that sport does not become simply a spectacle and that it is not forgotten that what is important is the practice os sport. It is only in the initial stage, when funds are still short, that sport needs a very high percentage of competitions: at that stage they are vital to its very existence. But as sport develops and financial resources increase, organised competition, like food for humans, should decrease in relation to total investments so that other sectors can be promoted. In fact, however, competitions continue to receive the lion's share and tend to become increasingly complex and luxurious; this creates a vicious circle and keeps the level of sport low.

By contrast, the three factors whose influence is direct (promotion, physical education and technical improvement), which demand long and patient work, and whose results will be by no means spectacular, are constantly neglected by those in charge. An analysis of the factors and of the related programme-budgets brings these tendencies to light and permits measures to be taken to prevent or, at least, to reduce them. Programme-budgets enable

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us, better than any verbal pronouncements, to ascertain the true nature of the sports policy being followed. Concentration of resources on factors which tend to favour the élite, or the channelling towards the élite of essentially neutral factors will reveal, better than any words can do, the real nature of the policy being pursued.

3. SPORT FOR ALL AND DEVELOPMENT FACTORS

Sport for All appears, in the present study, merely as one of a number of possible sports policies. We shall not discuss in detail how the idea of Sport for All might be transformed into a policy, but we would like to make a few comments on the subject.

First, a preliminary remark. The above classification of factors (direct, instrumental, indirect) makes it possible to judge whether a given policy tends, in general, to favour the mass of ordinary practitioners or the élite. It must, however, be borne in mind that it is only over the long term - some fifteen years - that any proper assessment can be made of the results of a particular combination of factors. Consequently, a policy centred on the factors having a direct influence may appear, from a short-term assessment, to be different from what it actually is. A policy of Sport for All must be expressed through the three fundamental aspects of the present methodology: the level of sport, the sport situation and the development factors. The level of sport requires no comment, for it is obvious that a choice in favour of the masses implies fixing a target level. An analysis of the sport situation will bring out the strong and the weak features of the existing structure from the point of view of Sport for All. Are there elements which facilitate a policy of Sport for All? Is the conditioning framework favourable to such a policy or not etc.

Lastly, and above all, a policy of Sport for All will be expressed through the various development factors: it will accord priority to promotion, physical education, teacher training, training of instructors, and equipment and facilities for the mass of ordinary practitioners. On the other hand, technical improvement, the training of coaches, and equipment for the élite will be relegated to the background. The neutral factors, like sports organisation and competitions, will tend to promote Sport for All.

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A final remark: any simplistic policy aimed at favouring the mass of ordinary practitioners and ignoring the élite, would be lacking in realism. Indeed, it is highly possible that the existing sports structure would make such a policy sterile, preventing it from attaining its aim, namely the development of Sport for All. The sociological interdependence between practitioners and élite makes it essential to maintain an élite, even under a policy of Sport for All. Nevertheless, any élitist policy must be kept within certain limits, even if they be only relative.

4. CONCLUSIONS

To conclude this chapter, I should like to underline a point that I have made already. Application of the present methodology - quantification of the level of sport, functional analysis of the sport situation, bringing into play of the development factors - reveals that the sports policies that can be carried out effectively in a given situation are, after all, neither as numerous nor as arbitrary as might be believed. The world of sport, despite the various interpretations that might be given to it and the different aims that might be assigned to it, possesses its own laws which derive from the interdependence of its elements. Even if a short-term policy which disregarded these laws appeared to be effective, time would show its success to be uncertain, unsubstantial, short-lived and doomed, in the long-run, to failure.

A sport situation may be changed and brought gradually closer to an "ideal", but this improvement will be real and lasting only if it is based on an awareness of the situation, of the interdependence between its constituent elements, and of the factors effecting the change.

Contrary to what some might think, the methodology outlined here is based on the requirements of practice and is perfectly adaptable to the conditions of any country. It is intended as an instrument with which to assess any given sport situation in order the better to transform it.

No-one making a genuine effort to work out a sports policy should be misled by the theoretical appearance or the econometric and statistical mechanisms of this study, for all does not depend on the mathematical formulae: these merely express a rationalisation process. This process doe not, by any means, exclude subjective assessment and judgement nor can it ever be substituted for policy decisions: it merely defines the limits within which such decisions must be taken. In a word, it helps avoid idealisms which, though laudable in themselves, run counter to their own ideal by failing in practice.

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PART II

The mathematical instruments: outline of a model for decision-making

by

Mr Juan de Dios Garcia Martinez

CHAPTER I

THE MATHEMATICAL MODELS AND SPORT AS A SYSTEM

An attempt will be made in this part of the study to work out a mathematical model for decision-making, using the concepts defined above by Benito Castejon who, as we have seen, considers sports reality as a system.

It seems advisable, first of all, to explain the general methodological approach followed throughout the study.

This general approach entails proceeding by successive approximations. It consists, first of all, in distinguishing five independent stages in each phase of the work and then integrating these into an overall outline. The initial separation into individual stages is necessary because it is humanly impossible to approach the problem as a whole. It is a continuous forwards and backwards process with the result that each phase of the work is based on the preceding one, conditioning and consolidating it. The final result is an overall outline, with fairly strict limitations in many cases, but coherent. To make the process operative, team meetings are necessary.

Diagram 1/1 shows, first, the five stages in the order followed throughout the work and, second, the overall outline with its interrelations.

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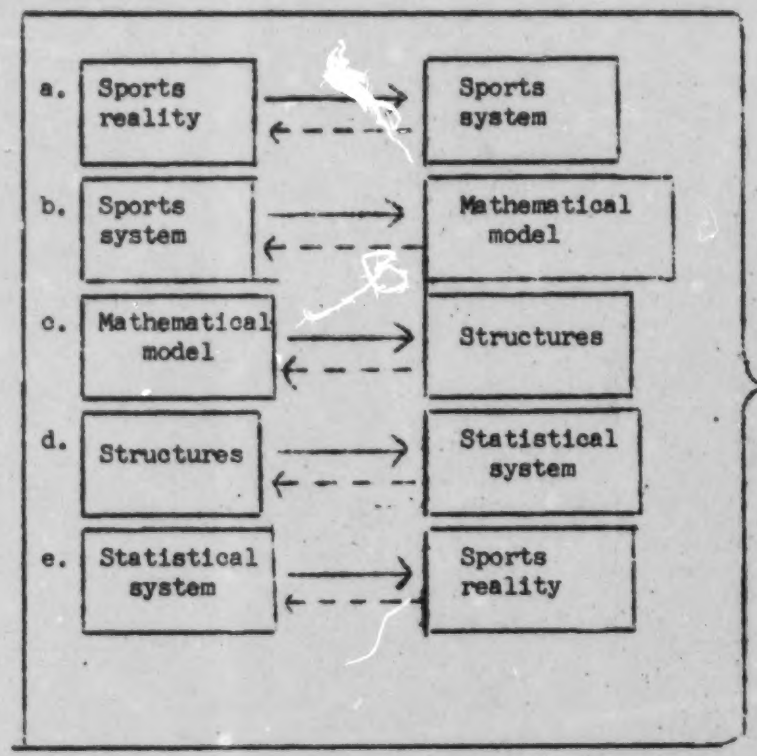
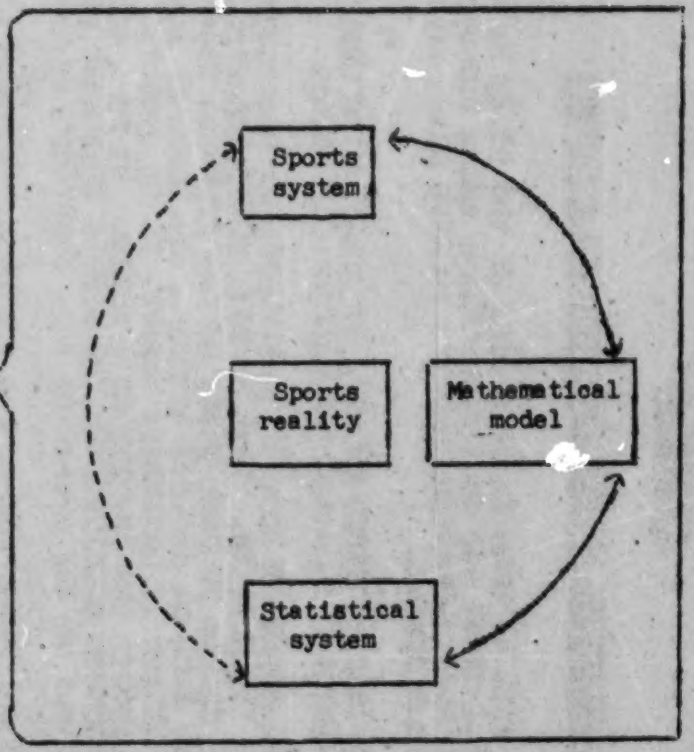
DIAGRAM OF GENERAL METHODOLOGY

STAGES OF WORK



OVERALL OUTLINE



A. SPORTS REALITY AND SPORTS SYSTEM

According to the preceding diagram, a mathematical model for sports policy can only devised if it is possible to imagine sports reality as a system, that is to say as a set of elements the interrelations of which can be determined and in which the laws governing change from one situation to another can be identified.

The basic assumption that sports reality is a system is not the product of a preference for abstract speculation, but is born of the need for concrete action. For experience shows that no policy can be effective unless it is based on a comprehensive view affording a clearer understanding of the sports situation at home and permitting a comparison of one's own experience and aims with those of other countries. Once this need is felt, the idea that sports reality can be conceived as a system, suggests itself spontaneously.

But even after this assumption has been accepted, numerous difficulties remain. As the work progresses it becomes apparent that many issues can be settled only by means of agreements.

It should be stressed that, from the methodological point of view, the working out of a sports system (in the sense of determining the sport situation) implies a process of abstraction. In order to ascertain the exact situation and be able to influence its evolution, it is essential to approach the reality first from a distance, and then return to it by successive approximations.

B. SPORTS SYSTEM AND MATHEMATICAL MODEL

Once the sports system has been defined, it must be transformed into a mathematical model.

Such a model has a triple function:

- First, it is an instrument for exact description: it translates the previously defined sports system into mathematical language; this presupposes a clear differentiation between what can be represented mathematically within the model and what, for the time being at least, has to be left outside.

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- Second, the mathematical model is an instrument for knowledge and analysis : it is a tool for understanding and explaining sports reality and serves, at the same time, as a diagram showing the interrelationship of the constituent elements.

- Lastly, the mathematical model is an instrument for control: it is a means of anticipating and governing the behaviour of the "real".

A mathematical model functions on the basis of information, that is to say, of statistics. The nature and form of the information required must be specified in a statistical diagram. This obviates the difficulty, experienced too frequently, of not finding the necessary information for a given analysis, for the simple reason that all too often those using the statistics do not compile them. This will continue to be a problem as long as the skeleton model does not comprise all the aspects of sports reality. Though one may doubt the feasibility of "wholly mathematising reality" the effort is nevertheless worthwhile.

An important methodological problem remains: how is a sports system, once defined, to be converted into a mathematical model? Is there a specific method of doing this?

This kind of problem becomes much more acute when a system has to be built up from reality; if the system is perfectly defined, formulation of the mathematical model is, in many instances, simply a matter of transcription. Experience shows that this is the case when reality considered as a system, is defined in a logico-mathematical way, that is to say, the diagrammatic representation of the system and that of the model are closely interconnected. Consequently, while it is true that the methodological problem referred to becomes more acute when it comes to representing a system in the form of a diagram, it essentially concerns a practical question: what is the most suitable mathematical language in which to expound the system?

The method used implicitly in this work might be called that of grapho-modelism, since it is based on the idea that for any model, in the form of a set of equations, there is a corresponding graph which reflects the network of interrelations.

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Let us imagine a model constructed from the following system of equations:

1. $y_1 = f_1 (y_2, z_1)$

2. $y_2 = f_2 (y_3, z_2)$

3. $y_3 = f_3 (z_3)$

Diagrammatically, the system of interrelations represented by this model is the following:

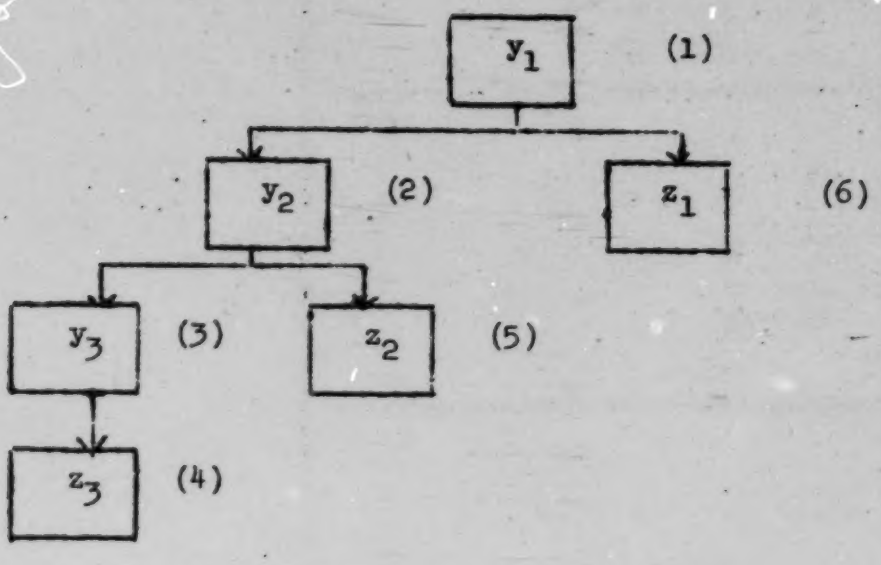

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DIAGRAM 1/2

MODEL 1

Serial number	Symbol	Meaning	Definition	Number of equation	Equation	Source
1	y_1	-	-	(E - 1)	$y_1 = f_1 (y_2 z_1)$	1 = f (2.6)
2	y_2	-	-	(E - 2)	$y_2 = f_2 (y_3 z_1)$	2 = f (3.5)
3	y_3	-	-	(E - 3)	$y_3 = f_3 (z_3)$	3 = f (4)
4	z_3	-	-			
5	z_2	-	-			
6	z_1	-	-			

From the preceding diagram, we arrange the variables in such a way that we take, as the first variable, the one we are ultimately trying to explain (y_1); then, as second variable, we take the first explicative, that is to say (y_2), leaving (z_1) aside for the moment. The third variable is (y_3) since it is the first explicative of (y_2), and this puts (z_3) in fourth place. Because (z_3) is, what is called in econometrics, an exogenous variable, we come back along the graph in the opposite direction, choosing (z_2) as variable number 5. By the same criterion, (z_1) will occupy sixth place.

The advantage of such an arrangement is that it provides us with a logical criterion for disposing the equations of a mathematical model; consequently, we have also a systematic way of arranging the set of equations proper.

Diagram 1/2 presents an orderly arrangement of model 1 which we have taken as an example: the first column contains the serial numbers of each of the variables. In the second column are entered the symbols used for each of the variables, and in the next column the meaning of the symbols.

An extra column could be included with the definition of each variable, although it would be more normal to add a separate table of definitions. The model proper is contained in columns five and six, while the column headed "source" shows the interrelations between variables represented by their serial number within the set. It is this column which serves as a basis for drawing the graph corresponding to the model.

So far, we have always been convinced of the clarity of grapho-modelisation insofar as it enables any system of equations to be arranged in an orderly and graphically intelligible manner, especially in the case of models comprising numerous equations and variables. The other advantage of grapho-modelisation is that it provides a logical instrument for the actual construction of a model.

Whatever the model, the most important and difficult stage in its construction is that of selecting the variable or set of variables which is to represent the primary object of the model in question. In economic development models, for example, the object is to define the trend of the gross national product; in educational planning models, to calculate the cost involved; in our case, we have chosen the LEVEL OF SPORT as the starting or culminating point of the entire sports system.

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It is difficult to give a ready-made recipe for solving the problem of selection. Experience and creative capacity are the sole guides to a wise choice. The initial results can subsequently be improved or perfected by a process of research; in our opinion, the whole of the present study is to be regarded as such a process. It is a first attempt to translate sports reality, viewed as a system, into mathematical language.

Once the initial variable or variables have been selected, the next step is to trace the paths which may lead us to the support points of these first variables, and so we begin to move along a graph which takes shape as we progress (1).

The internal structure of any system or model can obviously be represented in numerous ways. The one proposed here for the sports system is one of these, but it has the advantage, and the disadvantage, of being the first to be presented to the public. Of course, the grapho-modelisation method, as applied in building up a reality-based system, serves only for the formulation of systematic questions, so that it is vitally important that the "person" questioned should have first-hand experience of that reality. By contrast, it is much more useful, in the case of a model to be constructed beforehand, to use a previously explained system, for otherwise the system and the model will be made to coincide.

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(1) It will often be necessary to have recourse to variables used previously, owing to the frequent occurrence, in reality, of "interdependence" phenomena.

C. MATHEMATICAL MODEL AND STATISTICAL SYSTEM

It should perhaps be emphasised that the present study is not an econometric one in the strict sense, since it is, at once, something more than, and yet not quite, an econometric exercise. The reason is this: it has become customary, in the construction of an econometric model, to distinguish three different, but not totally independent, main stages:

- definition of the model;
- estimation of the parameters and contrasts;
- forecasting and simulation.

These three main stages can be divided into numerous sub-stages.

The present study is an incomplete econometric study in the sense that it deals with only one of these stages: that of prior definition which, based on the sports system, serves as a point of reference for outlining a statistical system. But in doing so, the present study actually fulfils the two functions, which do not normally enter into econometrics owing to the fact that, in most cases, the one and only objective is forecasting.

If we define a mathematical model as a set of symbols interrelated through specified mathematical functions (1), then a model comprises parameters in addition to symbols. In econometrics, "structure" is the name given to a model with estimated parameters, so that any model may be considered as a family of "structures" (2).

The transition from model to "structure" is effected by using the available statistical data and a few of the various existing estimation methods (3). In our case, instead of constructing a model corresponding to the existing statistical

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(1) It must be admitted that this mode of definition is not very mathematical.

(2) Attention should be drawn to the enormous difference between this econometric concept of "structure" and that of system or structure in the more general sense.

(3) There is no doubt that in theory, and sometimes in practice, parameters can be estimated without basic data.

situation, we are trying first to define the type of analysis that needs to be made with a view to carrying through a technically consistent sports policy, and then we shall try to determine the type and form of the information required. Thus, in the present study, the statistical system - instead of being the point of departure - becomes the last link in the chain, which, starting from sports reality, comes back to it through the statistical system.

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CHAPTER II

MATHEMATICAL MODEL

For the purposes of this exposé the present chapter is divided into three sections, which form, in effect, a logical and coherent whole, showing the relation between the three components of the sports system.

In the first section the concept "level of sport" is analysed and defined as a function of the élite and of the number of ordinary practitioners; it is expressed in the mathematical formulae which seem to be the most appropriate. In the second section, an attempt is made to show the relation between the level of sport and the sport situation by means of a dual process: on the one hand, the concept "sport situation" is enlarged and, on the other, reduced to coincide with the elements used initially to define the level of sport. In the third section, an attempt is made to define a sports policy model showing the connection between the level of sport, the sport situation and the development factors.

It should be added that the present chapter presupposes a detailed study of the whole of Part I which deals with the basic concepts.

A. LEVEL OF SPORT, ELITE AND ORDINARY PRACTITIONERS

As stated in the preceding chapter, it has first to be decided which variable is to serve as the starting point for the entire grapho-modelisation process.

As Mr Castejon emphasised repeatedly throughout Part I, the concept "level of sport" (1) (hereinafter denoted by the initials LS) is the basis of the proposed system. The level of

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(1) Benito Castejon defines the level of sport as the ratio of the number of actual sports practitioners to the actual élite and the ratio of the number of potential sports practitioners to the corresponding ideal élite. As we shall see later, it is possible to give a broader, though for the moment less functional, definition.

sport (LS) has been defined as a function of the number of actual practitioners (NRP), of the actual élite (RE), of the number of potential practitioners (NPP) and of the ideal élite (IE) (1); it may be expressed in mathematical language as follows:

LS = f(NRP, RE, NPP, IE)

The foregoing may be considered as a simple system which can be represented by numerous uni-equational models since the characteristic of the function may take very different forms. Common properties may, however, be identified, whatever the mathematical expression chosen.

LS being endogenous variable, NRP and RE exogenous variables, and NPP and IE parameters, it follows that LS = f(NRP, RE, NPP, IE) is a family of iso-sports curves; for each level of sport (LS) there is an infinite number of combinations of actual practitioners (NRP) and actual élite (RE) which possess the same property. Obviously, if we vary the values given to the ideal élite (IE) and the number of potential practitioners (NPP) the family of curves varies likewise.

The advantage, in our view, of using such abstract terms is that the "concrete" is embodied within a general model; this enables us to understand not only the actual situation, but all the possible situations that may exist in reality, and thereby enriches our knowledge. Moreover, from the strictly mathematical point of view, it is possible to use the entire theory of differential analysis, as marginalism does in economics, but with the advantage that, here, everything is measurable, albeit with difficulty.

Let us now turn to a vitally important problem: what is to be the characteristic of the mathematical function which will enable us to measure the level of sport?

Normally, the characteristic may assume numerous forms. But, at the outset, we shall demand two properties:

1. <u>The iso-sports curves must be descending curves</u>

Consequently, if one point of the co-ordinates (NRP_o, RE_o) increases, for example: the number of actual practitioners ($NRP_o \longrightarrow NRP_1$), then the actual élite (RE_1) must decrease ($RE_1 < RE_o$). The problem which arises here (and which will be left unsolved for the time being) is to know in what proportion or in accordance with what law.

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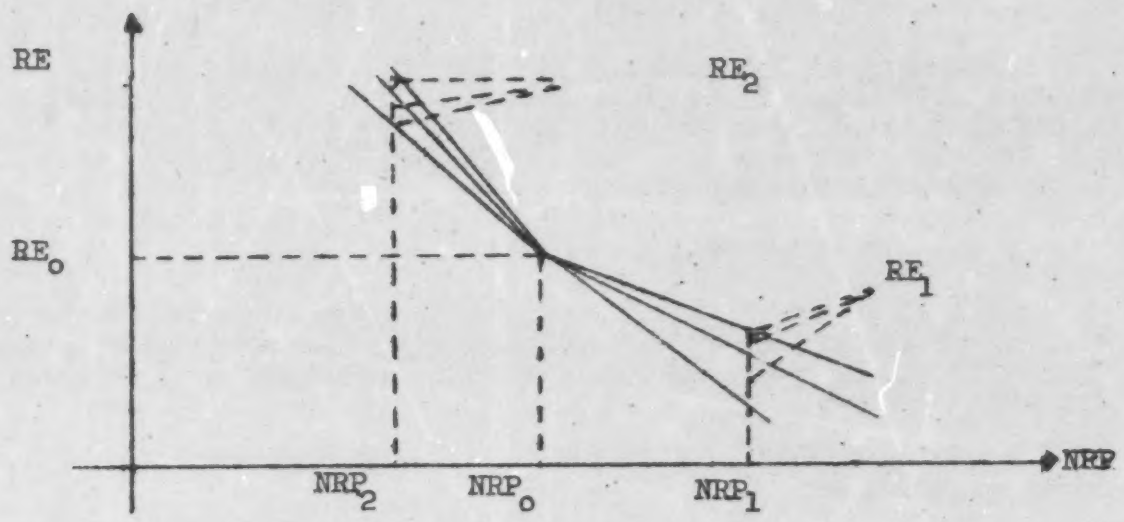
(1) See page 53.

On the other hand, if the number of actual practitioners decreases ($NRP_o \longrightarrow NRP_2$), the actual élite ($RE_2$) must increase ($RE_2 < RE_o$). We lack the definition of this law for the moment. In principle, we may assume that it is the same as in the preceding case, but it would not be irrational to think in terms of a hysteresis phenomenon.

The foregoing could be represented graphically by three types of curves, all following curves.



2. The second diagram we demand of the iso-sports curves relates to what is most specific in the model: development of the level of sport is measured by reference to an ideal situation, and not by comparison with past situations. This is the absolutely new feature of this model, which differentiates it from the traditional approach.

The problem arising here is of great methodological interest, but very little attention has been given to it. In economics, the rate of development is generally measured by the percentage increase in any given year over the preceding one, which would seem to imply that the optimum had been reached in that particular year, so that any subsequent increase must be considered as an improvement. Thus, it is impossible to introduce qualitative criteria for development. We have a very different situation, however, wherever there is a reference diagram defining the desirable type of economic situation: the rate and level of development then become a function of the relation between a given situation and the target situation to be attained.

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Any mathematical function possessing the two properties just mentioned would be valid. In this study, we shall simply indicate the directions in which to look in order to have most chance of finding the best one.

Benito Castejon, defining sports reality as a system, suggested a first direction in which to look. In Part I he proposes a first possible mathematical formula for the level of sport (1).

1.1 B. Castejon's first hypothesis: $LS = \frac{NRP \cdot RE}{NPP \cdot IE}$

According to the mathematical diagram described above, we find ourselves in the presence of a family of equilateral hyperbolas conditioned to the values of the parameters NPP and IE. The equation (1.1) would perhaps become clearer if it is presented in another way:

.1.1.1 $LS.(NPP \cdot IE) = NRP \cdot RE$

That is to say that, inside each iso-sports curve, whatever the values assumed by NRP and RE, their product will be constant. Where NPP and IE vary, we have different families of iso-sports curves.

Applying a similar criterion, we could have defined the level of sport as:

1.2 $LS = RE/NRP: IE/NPP$

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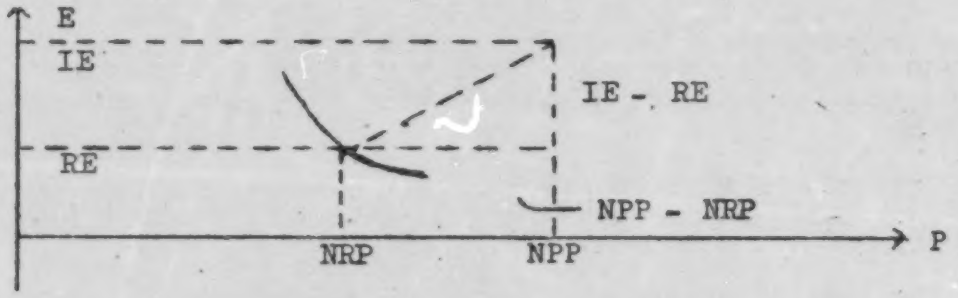
(1) Secretariat note: it will be recalled that Mr Castejon explains (see page 33 above, and also document CCC/EES (72) 65 pages 5 and 10), that he has abandoned this first formula because the present econometric study shows the Pythagoras theorem to be more appropriate.

Another possible method consists in defining the level of sport as the distance between two points (NRP, RE), (NPP, IE).



By simply applying the Pythagoras theorem, we arrive at a third formula:

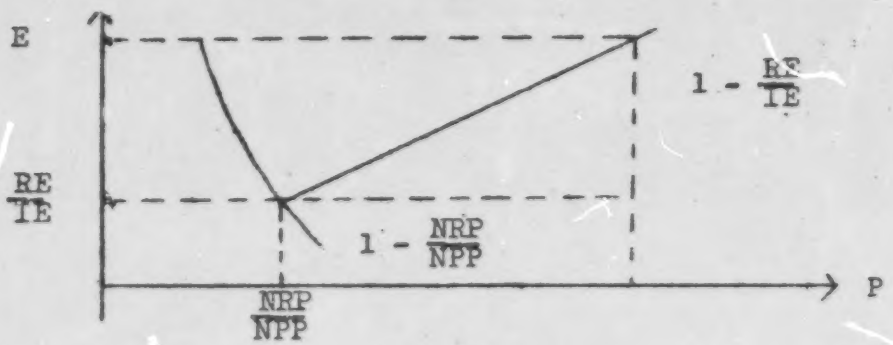
$$1.3 \quad LS = \sqrt{(NPP - NRP)^2 \div (IE \div RE)^2}$$

Everybody knows that with the preceding equation, the iso-sports curves take the form of circumferences with the ideal point (NPP, IE) as the centre.

Using an identical diagram, it is possible to obtain a fourth formula:

$$1.4 \quad LS = \sqrt{(1 - \frac{NRP}{NPP})^2 \div (1 - \frac{RE}{IE})^2}$$

Graphically, the transition from the expression (1.3) to (1.4) is very simple because it is merely a matter of relativising the axes of the co-ordinates in relation to NPP and IE, by transforming them into percentages.



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It is clear that in the last mathematical expression the maximum value of the level of sport is LS = $\sqrt{2}$.

The most important conclusion to be drawn from these four ways of expressing iso-sports curves in mathematical formulae is that we find ourselves now in the field of "geometric loci". Consequently, there are numerous ways of defining iso-sports curves.

In our opinion, of the four equations presented here, the most appropriate is the last, and this for the following reasons:

a. The first formula (Mr Castejon's starting point) gives excessive importance to variations in the élite by multiplying the latter by the number of actual practitioners, whereas it is the reverse that happens when the number of practitioners increases. In the second formula the influence of the number of practitioners on the level of sport is regressive.

b. The disadvantage of the third equation resides in the non-relativisation of the values of the actual élite and the number of actual practitioners in relation to the potential élite and the number of potential practitioners; moreover, owing to the big difference between the absolute values of the élite and of the mass of ordinary practitioners, variations in the élite have hardly any effect on the level of sport because an ordinary practitioner is counted in the same way as one of the élite.

The equation 1.4, whose form is clear, gives the same value to a percentage variation in the élite and in the number of practitioners, that is to say, an increase of 10% in the élite and 10% in the number of ordinary practitioners has the same influence on the level of sport, so that a new person joining the élite has more influence on the level of sport than a new person joining the mass of ordinary practitioners.

Should this influence of the élite on the level of sport be judged excessive, it would have to be offset by balancing each of the components, in which case the expression would become:

$$1.5 \quad LS = \sqrt{\alpha_1 \left(1 - \frac{NRP}{NPP}\right)^2 \vdots \alpha_2 \left(1 - \frac{RE}{IE}\right)^2}$$

$$\alpha 1 + \alpha 2 = 1$$

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The problem remaining to be solved is that of the value of $\alpha_1 \circ \alpha_2 = 1$ (1).

It should be pointed out that, while formulae of the type (1.4) and (1.5) serve to measure the level of sport, a descending sequence indicates the opposite of what might be thought at first sight, for it means that the level of sport is rising.

B. LEVEL OF SPORT AND SPORT SITUATION

In Part I of this study, Benito Castejon explained that, in his methodology, the concept "sport situation" had a double meaning: first, it was the logical resultant of a given level of sport, and second, it formed the basis for a policy aimed at improving a given level of sport through the action of the "development factors". Comparing the concepts "level of sport" and "sport situation", Benito Castejon observed that the second concept represented an analytical and functional approach to the "world of sport", whereas the first viewed the "world of sport" as a whole. In other words, the level of sport expresses the entire relationship existing between the mass of ordinary practitioners and the élite and permits an overall comparison between the real situation and the ideal "target" situation, whereas the sport situation is the complex of technico-sports relations existing between the basic elements of sport, on the one hand, and between these and a series of non-sports circumstances, on the other.

From a mathematical angle, however, these facts do not provide an adequate basis for defining the relation existing between the level of sport and the sport situation. Further clarification is needed and, for this, a few preliminary remarks are necessary.

The concept of sport situation cannot be delimited simply by listing the properties which an element must possess in order to be considered a component of the sport situation. Benito Castejon, for his part, has enumerated all the elements constituting the sport situation.

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(1) It should perhaps be recalled that among the geometric loci the ellipsis, for example, has the property of weighting one axis more than the other.

He distinguishes two types of elements: the specifically sports elements ("internal elements") and the others ("external elements"); though outside its control, the latter nevertheless affect sport ("conditioning framework"). In other words, the sports system is part of a vaster complex, a unit in a higher system, an integral system existing in reality. The description given in Part I of this study may therefore be summed up as follows: in its widest sense, the sport situation is constituted by a set of related elements which are components of an integral system existing in reality and divisible into various sub-systems: sport system, economic system, educational system, demographic system, political system, health system, geographical and climatic system, "social systems" etc.

If we imagine this integral system as a double entry table (diagram 2.2/1), all the sub-systems will be listed in the horizontal and vertical columns. The horizontal ones will show the influence, the vertical ones the dependence, of each sub-system on the others. Thus, diagonally, the table will show the situation and interrelations between the internal elements of each sub-system.

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Diagram 2.2/1

Sport situation

Systems	1	2	3	4	5	6	7	8
Sport system	Internal sports elements	Influence on the conditioning framework (not measurable in the short-term)						
Economic system	Conditioning framework							
Demographic system								
Geographic and climatic system								
Educational system								
Health system								
Political system								
Social system								

The description of the sport situation given by Mr Castejon lends itself perfectly to this kind of diagrammatic representation; the "conditioning framework" data would be entered in spaces (2.1) to (8.1), while the elements and internal interrelations of the sport system would appear in space (1.1).

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To sum up, we give the following list of elements which constitute the sport situation, leaving the conditioning framework out of account:

Types	Elements
1. Basic elements	1.1 Ordinary sports practitioners
	1.2 Elite
2. Supplementary elements	2.1 Pupils receiving physical training
	2.2 Hours of sports practice per week
3. Direction and organisation	3.1 Number of sports bodies
	3.2 Leading officials (unpaid)
	3.3 Administrators (paid)
	3.3.1 Managers
	3.3.2 Administrators and auxiliaries
	3.3.3 Subordinate staff
4. Instrumental elements	4.1 Material
	4.1.1 Area (m^2) covered by sports facilities
	4.1.2 Existing sports equipment
	4.2 Human
	4.2.1 Number of sports technicians
	4.2.1.1 Teachers of physical training
	4.2.1.2 Instructors
	4.2.1.3 Coaches
	4.2.1.4 Judges and referees
	4.2.1.5 Health personnel (doctors and auxiliaries)

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Since we may, as we have seen, consider Benito Castejon's description as schematising the sport situation, we can equate (from the methodological point of view) the sport situation with the two basic elements in the above list: number of ordinary sports practitioners and number of the élite. The representative value of these two elements is obviously much less than that of the entire list, for the more elements we include in the sport situation, the easier it becomes to distinguish concrete types of sport situations and, at the same time, gain a more thorough knowledge of the complex structure of the actual situation one is concerned with. But, if we accept this kind of logical reasoning, the problem of definition becomes a problem of knowing how far to go.

We have thus arrived, almost without realising it, at a generalisation of the concept of "sport situation" which enables us to see clearly a possible relation with the level of sport.

Earlier on, the level of sport was defined as the ratio of the number of actual sports practitioners to the actual élite and the ratio of the number of potential sports practitioners to corresponding ideal élite. When studying the possible mathematical formulae for expressing the level of sport, we noted that one very interesting formula was that representing the level of sport as the distance between an actual situation and an ideal situation. If we accept this relationship, it is easy, once the sport situation (defined as broadly as one chooses) is known and the corresponding ideal model constructed, to define the level of sport as the distance between two points in a space which has as many dimensions as elements, this space representing the sport situation.

The mathematical expression then becomes a generalisation of the Pythagoras theorem:

$$1.6 \quad LS = \sqrt{\sum_{i=1}^{n} (CI_i - CR_i)^2}$$

in which CI_i = Component of the ideal sport situation

CR_i = Component of the real sport situation.

Applying the criteria used already, one may proceed from the foregoing expression to the following one:

$$1.7 \quad LS = \sqrt{\sum_{i=1}^{n} (1 - \frac{CR_i}{CI_i})^2}$$

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As said earlier, this formula avoids the problems entailed by a formula of the type (1.6).

A more perfected expression would be the following:

$$1.8 \quad LS = \sqrt{\sum_{i=1}^{n} \alpha_1 \left(1 - \frac{CR_i}{CI_i}\right)^2}$$

in which $\alpha_1 + \alpha_2 + \alpha_3 + \ldots\ldots \alpha_n = 1$.

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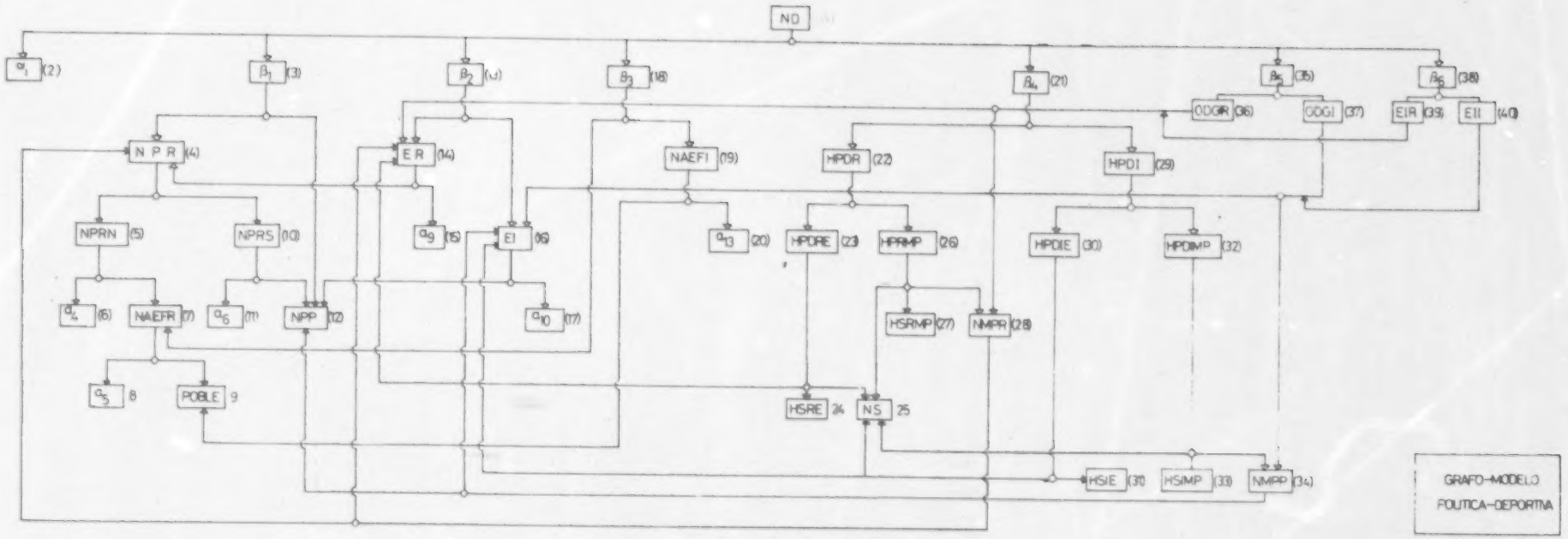
ND
α_1 (2)
β_1 (3)
β_2 (4)
β_3 (18)
β_4 (21)
β_5 (35)
β_6 (38)
ODGR (36)
ODGI (37)
EIR (39)
EII (40)
N P R (4)
E R (14)
NAEFI (19)
HPDR (22)
HPDI (29)
NPRN (5)
NPRS (10)
α_9 (15)
EI (16)
α_{13} (20)
HPDRE (23)
HPDRMP (26)
HPDIE (30)
HPDIMP (32)
α_4 (6)
NAEFR (7)
α_6 (11)
NPP (12)
α_{10} (17)
HSRMP (27)
NMPR (28)
α_5 8
POBLE 9
HSRE 24
NS 25
HSIE (31)
HSIMP (33)
NMPP (34)
GRAFO-MODELO
POLITICA-DEPORTIVA

C. MODEL FOR A SPORTS POLICY

In order to express the sports policy in mathematical terms, a clear and precise connection must be established between the level of sport, the sport situation and the development factors. In the preceding paragraphs we have seen how a mathematical relationship can be established between the level of sport and the sport situation; we shall now show how the relations between the development factors and the two other basic concepts of the sports system can be expressed in mathematical terms.

The method followed is that described earlier as grapho-modelisation. The basic principles which guided us in the construction of the model are the following:

1. The level of sport is to be defined as a function of the components of the sport situation. As these components are associated with a parameter, it is possible to restrict the number of factors directly influencing the level of sport. Thus:

2. The other equations of the model express the interrelations between the elements of the sport situation through structural parameters which give an overall view of the situation.

3. The structural parameters are the links with the development factors.

4. It is impossible a priori to define in mathematical terms the form in which the development factors will exercise their influence. However, it is possible to class them in order of importance, as Benito Castejon does in Part I of this study, and to adopt the programme-budget technique as a method of bringing the development factors into play.

The following tables offer a model for a sports policy.

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SPORTS POLICY MODEL

Serial number	Symbol*	Meaning	Source	Number of equation	Equation
1	ND	Level of sport	1=f(2,3,13,18, 21,35,38)	(E-1)	$ND = f(\alpha_1, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6)$
2	α_1	Vector of weightings assigned to each of the terms in the mathematical formulation of the level of sport			
3	β_1	Ratio of actual to possible practitioners	3=f(4,12)	(E-2)	$\beta_1 = \frac{NPR}{NPP}$
4	NPR	Number of actual practitioners	4=f(5,10)	(E-3)	NPR = NPRN + NPRS
5	NPRN	Number of new practitioners ie younger practitioners	5=f(6,7)	(E-4)	$NPRN = a_4$ NAEFR
6	a_4	Proportion of physical education pupils becoming sports practitioners	Parameter of the sport situation		a_4 = f (factors for development)

* The symbols used in the model on page 65 and explained on pages 67-72 are abbreviations of the corresponding words in Spanish. Example: the symbol ND is an abbreviation of Nivel Deportivo.

Serial number	Symbol	Meaning	Source	Number of equation	Equation
7	NAEFR	Number of physical education pupils	7=f(8,9)	(E-5)	NAEFR=a_5POBLE
8	a_5	Proportion of children of school age who belong to physical education classes	Parameter of the sport situation		a_5=f (educational system, physical education as a factor for development, technical improvements and other factors)
9	POBLE	School population under 14 years of age	Conditioning framework (demography)		
10	NPRS	Number of actual practitioners over 14 years of age	10=f(11,12)	(E-6)	NPRS=a_6NPP
11	a_6	Proportion of practitioners (> 14 years old)	Policy parameter		a_6=f (factors for development)
12	NPP	Number of possible practitioners	Conditioning framework	(E-7)	NPP=f (structure of the population by age, sex, occupation, income and educational level)

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Serial number	Symbol	Meaning	Source	Number of equation	Equation
13	β_2	Ratio of actual to ideal élite	13=f(14,16)	(E-8)	$\beta_2 = \frac{ER}{EI}$
14	ER	Number of actual élite	14=f(15,4)	(E-9)	$ER = a_9 NPR$
15	a_9	Proportion of actual élite	Parameter of sport situation		a_9 = f (development factors, technical improvements)
16	EI	Ideal number of élite	16=f(17,12)	(E-10)	$EI = a_{10} NPP$
17	a_{10}	Proportion of ideal élite	Policy parameter	(E-11)	a_{10} = f (law of diminishing returns)
18	β_3	Ratio of actual to ideal number of pupils receiving physical education	18=f(7,19)	(E-12)	$\beta_3 = \frac{NAEFR}{NAEFI}$
19	NAEFI	Ideal number of pupils receiving physical education	19=f(20,9)	(E-13)	$NAEFI = a_{13} POBLE$
20	a_{13}	Proportion of children of school age who should engage in physical education	Policy parameter		Normally = 1

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Serial number	Symbol	Meaning	Source	Number of equation	Equation
21	β_4	Ratio of the actual to the ideal number of practice hours	21=f(22,29)	(E-14)	$\beta_4 = \frac{HPDR}{HPDI}$
22	HPDR	Actual number of hours spent on sport per year	22=f(23,26)	(E-15)	HPDR = HPDRE + HPDRMP
23	HPDRE	Actual number of hours spent on sport per year among the élite	23=f(24,25,14)	(E-16)	HPDRE = HSRE x NS x ER
24	HSRE	Actual average number of practice hours per week among the élite	Estimate based on a survey		
25	NS	Number of weeks	Given		
26	HPDRMP	Actual number of hours spent on sport by ordinary practitioners	26=f(27,25,28)	(E-17)	HPDRMP = (HSRMP.NS) NMPR
27	HSRMP	Average number of hours per week spent on sport by ordinary practitioners	Estimate based on a survey		

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Serial number	Symbol	Meaning	Source	Number of equation	Equation
28	NMPR	Actual number of ordinary practitioners	28=f(4,14)	(E-18)	NMPR = NPR - ER
29	HPDI	Ideal number of hours of sport per year	29=f(30,32)	(E-19)	HPDI = HPDIE + HPDIMP
30	HPDIE	Ideal number of hours of sport per year for the élite	30=f(31,25,16)	(E-20)	HPDIE = HSIE x NS x EI
31	HSIE	Ideal average number of hours of sport per week for the élite	Policy parameter		
32	HPDIMP	Ideal number of hours per year spent on sport by ordinary practitioners	32=f(33,25,34)	(E-21)	HPDIMP = HSIR x NS x NMPP
33	HSIR	Ideal average number of hours per week spent on sport by ordinary practitioners	Policy parameter		
34	NMPP	Number of possible ordinary practitioners	34=f(12,16)	(E-22)	NMPP = NPP - EI
35	$\beta_{5(1)}$	Ratio of actual to ideal elements of organisation, direction and management(1)	35=f(36,37)	(E-23)	$\beta_5 = \frac{ODGR}{ODGI}$

(1) This and the remaining variables which follow require a higher level of disaggregation in a structural form.

Serial Number	Symbol	Meaning	Source	Number of equation	Equation
36	ODGR	Actual elements of organisation, direction and management	36=f(28,14)	(E-24)	ODGR = f (NMPR; ER)
37	ODGI	Ideal elements of organisation, direction and management	37=f(34,16)	(E-25)	ODGI = f (NMPP, EI)
38	β_6	Ratio of actual to ideal instrumental elements	38=f(39,40)	(E-26)	$\beta_6 = \frac{EIR}{EII}$
39	EIR	Actual instrumental elements	39=f(28,14)	(E-27)	EIR = f (NMPR,ER)
40	EII	Ideal instrumental elements	40=f(34,16)	(E-28)	EII = f (NMPP,EI)

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PART III

The statistical instruments

by

Mr José Rodriguez Carballada

CHAPTER I

GENERAL REMARKS

This final, statistical part of the study is of a complementary and auxiliary character. In it an attempt will be made to scrutinise sports reality closely and identify more precisely the different variables which influence the level of sport directly or indirectly. We are aware that no human work is perfect and it is for that reason that the present study is being submitted for analysis and consideration. Criticism of it will enable us to draw conclusions profitable to all.

What we are seeking to do is to establish a general statistical system which may be used in all countries, not only by the highest decision-making authorities, but also by the sports organisations at the base. Our aim is to sketch out a statistical schema that will be of help in carrying out all the analyses necessary for the purpose of rationalising policy decisions, as Benito Castejon suggests.

We are forced to acknowledge that the mathematical model expounded here presupposes much more statistical data than we possess at present, such data as is available being somewhat fragmentary (1). It must be admitted that the model is based on a concept of sport which either does not embrace the different sports activities or, if it does, considers them abstractly as "sport" in the aggregate, whereas one of the most attractive characteristics of sport, is, undeniably, its diversity: consequently, the specified model cannot be applied directly to the sports system as a whole unless internationally recognised criteria are adopted (2) to solve the aggregation problem, or, failing this, unless the model is adapted to individual branches of sport.

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(1) This is actually an advantage rather than a disadvantage, for the requisite type of data for framing a sports policy can then be specified in the requests issued.

(2) These criteria obviously include the following: all data on any variable in the reference sports activity is of equal quality.

There are difficult aggregation problems as regards the variables which define the directional and instrumental elements. For example, a club with 100,000 members cannot be treated in the same way as one which has 1,000, nor must a club with ten sports sections be treated in the same way as a club with two. Where sports installations are concerned, it would be wrong merely to add together, without prior homogenisation, the areas of a gymnasium, a swimming pool and a football ground, because the number of sports practitioners using them per unit of time varies; at first sight, the individual practitioner's performance per m^2 is less on a football ground than in the other two installations.

In the case of the human elements, whether directional or instrumental, aggregation problems arise with regard to the various classes of administrators and technicians, and there will sometimes be different categories within one and the same class. This necessitates considering more elementary variables than the basic ones already established.

Where sports facilities are concerned, the problem of heterogeneity becomes so complicated that it is practically impossible to define this variable in physical units, either in a general way or even within each branch of sport. However, though it is impossible to arrive at a detailed assessment of all the existing sports facilities, the federations can make partial studies and estimates of the equipment situation in the particular sport considered. Indirectly, use can be made of economic studies on consumption, production and trade, which comprise a section on sports equipment, but these provide us with aggregate data; they contain little information as regards type. Thus we have difficulty in knowing whether the facilities concerned are for the élite or not, or of ascertaining the number of units for each sports activity or the monetary value or geographical distribution of the facilities.

This aggregation problem raises another preliminary problem: that of giving statistically valid definitions of sport or of the individual variables in the mathematical diagram of the sports system. This is perhaps the most arduous task facing us in the whole study. In any event, it is here that the contribution afforded by international agreements will be the

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most decisive. Later on, we shall propose definitions for the most significant variables. In this first chapter we shall merely set forth the general concepts embracing the real and concrete elements, which, as always, are subject to revision.

As is well known, two criteria may be adopted for the purposes of defining a whole: that of intension or that of extension. The first entails listing the properties which each element must have in order to belong to the whole, whereas the second entails enumerating each and everyone of the elements constituting the whole. The first procedure is obviously a particularly useful one where the whole is made up of an infinite number of elements; the second procedure is not applicable in such a case.

In the present instance it is not always possible to define a variable precisely, so that we are sometimes obliged to adopt a dual criterion: for example, we define "literally" what is meant by sport and, at the same time, give a list of sports activities. Our aim will be to give definitions which serve our purpose.

Another aspect to be borne in mind is the place which the statistical system occupies in the general diagram (diagram 1/1) given at the beginning of Part II (econometrics). The link between reality and the statistical system is ensured by sources of information concerning sports organisations, schools, firms, families etc. What we need to do, therefore, is build up a data-bank from which to construct analytical models and make simulations, with the aid of appropriate aggregation and comparison programmes.

The methods used to obtain statistical information are the conventional ones: censuses, periodical statistics, pilot surveys.

The periodical statistics (generally annual) and pilot surveys must be based on knowledge of the behaviour of the entire population, which is the subject of the research: hence the need for periodical censuses of sports practitioners, sports establishments, sport's organisations and so forth. A census implies a heavy outlay and meticulous preparation, which might be spread over a long period. For that reason censuses will be carried out only once in eight years or, at most, every four years to coincide with the Olympic period. With such long intervals, however, there is a risk of important changes occurring and invalidating the available data.

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To keep the basic statistics up to date - for they are of great importance - pilot surveys could be carried out. Another method would be to institute a kind of continuous census by means of "living registers" of the data characterising the sports population. This will entail the most obvious and indispensable characteristics in index cards for the purposes of pilot surveys or of periodical assessments of certain strategic data enabling the development of the national or regional sports situation to be analysed both from a general point of view and from the point of view of each of the branches of sport. These registers might be kept by means of a card index or an electronic computer, the data being entered, withdrawn or amended in accordance with prescribed criteria. The compiling of an electronic card index of sports organisations and establishments should be one of the first objectives.

After these introductory remarks let us now review briefly the variables which compose the "conditioning framework", the "sport situation" and the "development factors" respectively.

1. THE "CONDITIONING FRAMEWORK"

Sport is practised in a framework which conditions and influences it. This framework is constituted by the prevailing demographic, socio-economic, physiologico-anatomical, geographico-climatic conditions and social customs. These conditions are, in their turn, composed of variables, most of which are quantifiable but which cannot be included in a statistical model because this would greatly complicate the sports problem: the variables to be studied would be too numerous and would not, in any case, be of any immediate interest. They are external variables which influence sport and must consequently be taken into consideration; but as they vary only over a very long period of time and as sport cannot be controlled directly, we shall merely mention them here without going into details.

The following chapter contains a summary table of the main variables in the conditioning framework.

2. THE SPORT SITUATION

The sport situation calls for a more detailed statistical study, since it bears an immediate and direct relation to the level of sport which, being the most representative indicator of the stage of development reached by sport, forms the corner-stone of this entire methodology.

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In order to obtain a thorough knowledge of the sport situation, we shall consider the following as basic "statistical units":

1. Number of ordinary sports practitioners
2. Number of the élite
3. Number of pupils receiving physical training
4. Number of hours of sports practice per week
5. Number of sports organisations
6. Number of leading officials (unpaid)
7. Number of administrators (paid)
   - 7.1 Managers
   - 7.2 Administrative and auxiliary staff
   - 7.3 Subordinate staff
8. Area covered by sports installations
9. Number of sports technicians
   - 9.1 Physical education teachers
   - 9.2 Instructors
   - 9.3 Coaches
   - 9.4 Judges and referees
   - 9.5 Medical personnel (doctors and auxiliaries)

For each of these units we propose: (a) a definition, (b) a reference period, (c) a specified frequency, (d) a field of research, (e) a data-collecting procedure and, lastly, (f) questionnaires, statistical tables and records.

For the definition of the various sports activities we shall follow the criteria laid down by the competent international federations. We have drawn up a list of 42 sports (see following chapter).

I would emphasise that all the definitions and classifications in this study are submitted for comment with a view to discovering any errors and, above all, to defining uniform criteria. It is very important, indeed vital, that we should all speak the same statistico-sports language, for any concerted effort would be in vain if we started out with different basic concepts. This does not mean that we must adopt rigid attitudes, immutable for all time. The world of sport is a living and, consequently, a changing world. But since we are concerned with units of measurement, the concepts must be perfectly defined. We must realise that we are establishing a "metric system" for sport, and this must be the concern of all of us.

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3. THE DEVELOPMENT FACTORS

The statistical variables of the development factors will be studied in the same way as the variables of the sport situation. The subjects dealt with will also be the same.

In order to avoid making the study unnecessarily long, we shall devote only one table to these factors. The main comments are as follows:

Definitions: see Part I of the study.

The expenditure on each of the following factors will be considered as statistical units:

1. Promotion
2. Physical education
3. Technical improvement
4. Organisation of competitions
5. Training of physical education teachers
6. Training of instructors
7. Training of coaches
8. Facilities (ordinary sports practitioners)
9. Facilities (élite)
10. Sports organisation and structures

Frequency: annually, because the budgetary period of the bodies supplying the data will generally be one year.

Reference period: owing to the static character of the sport situation, the reference period is, as a rule, a precise date. By contrast, because of the dynamic character of the development factors, the reference period will be the sport season or the calendar year. The choice between the two will depend on the budgetary period of the sports organisations, and this, in turn, may depend on their private or official character. The important thing is to fix a uniform reference period for all countries, organisations, towns etc wishing to apply the methodology, in order that the statistical variables of the development factors may be homogeneous.

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Data-collecting methods: the procedures for obtaining data will depend on the sport situation in individual countries (centralised or non-centralised structure, public or private character).

Where a certain co-ordination exists and sports organisations use the same accounting methods, the problem will be simplified for them it will merely be a matter of adapting the classification of the development variables proposed in this study to that being practised already or conversely. On the same assumption, the budgetary accounts of each organisation will serve as a basis for drawing up statements not only of total expenditure but also of expenditure for each branch of sport, from local up to national level. This will provide periodical statistics for the purposes of establishing the amounts spent on individual development factors at the various levels and, subsequently, making the necessary classifications.

But the absence of uniform accounting methods and especially, of formal co-ordination among the sports organisations complicates the problem considerably, for then census operations such as pilot surveys may well give a distorted picture of the situation, accumulating the gravest errors as a result of evasive replies or even deliberate untruths, generally prompted by taxation fears, even in countries in which sport enjoys favourable fiscal treatment.

Consequently, it will always be difficult to obtain reliable financial data as long as no formal co-ordination or similar accounting procedures have been instituted for all sports organisations. For there will always be a tendency, where co-ordination is lacking and direct censusing or pilot surveys have to be resorted to, to misrepresent the facts by overstating or understating expenditure, as the case may be. Where it appears inexpedient, for statistical purposes, to ask for total and detailed figures for each category of expenditure from one and the same sports organisation, it will be necessary, once the aims of the inquiry have been determined, to specify the kind of data to be requested from each type of organisation; we are using the term "sports organisation" in a very wide sense to mean any body entitled to incur expenditure on sport (see below).

Field of research: From the institutional point of view, the research bodies or sources comprise: the state, the local authorities, school establishments, sports organisations, other bodies and organisations.

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The sports organisations, in the broadest sense of the word, include not only organisations proper (clubs, societies, associations, federations etc) but also sports establishments (sports complexes, installations).

As regards the various properties to be investigated for each of the ten variables, I think time will show how far our investigations should go.

Questionnaires, statistical tables and records

It would be premature to make any decision as to the questionnaires and tables to be used without first determining procedures. It can, however, already be stated that, whatever the method employed, the questionnaires and statistical tables will have to provide the necessary data for establishing a kind of "national sports accounts" on the lines of the table appearing at the end of the following chapter.

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CHAPTER II

TYPES OF DATA TO BE COLLECTED: DEFINITIONS, FORMS AND TABLES

I. SPORTS PRACTITIONERS

I.1 Definition: any person between 14 and 70 years of age practising one of the following sports for an average of at least two hours a week:

- Underwater sports
- Gliding
- Athletics
- Motoring
- Basketball
- Handball
- Baseball
- Billiards
- Bowling
- Boxing
- Hunting and shooting
- Cycling
- Fencing
- Skiing
- Water-skiing
- Football
- Gymnastics
- Golf
- Weight-lifting
- Riding
- Hockey
- Judo
- Wrestling
- Mountaineering
- Motor-cycling
- Motor-boating
- Swimming
- Skating
- Pelota
- Angling
- Canoeing
- Rowing
- Rugby
- Badminton
- Tennis
- Table tennis
- Archery
- Olympic shooting (pistol and rifle)
- Clay pigeon shooting
- Pigeon shooting
- Volleyball
- Sailing

I.2 Reference period: the reference period proposed is the calendar year in which the survey takes place. The Olympic year might be chosen.

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I.3 Frequency: every four years (Olympic period); a survey might be carried out on a sufficiently large sample for the findings to be significant; for example, at regional level.

It would be useful to carry out a national survey every two years on a smaller sample in order not only to ascertain the situation at that moment, but also to compare the Olympic year (1972) with the intermediate year (1974) between the two consecutive Olympic years (1972-76).

I.4 Data-collecting method: a pilot survey based on the questionnaire I.6.1 below.

I.5 Field of research: the research should cover the entire population between 14 and 70 years of age. The different characteristics to be investigated will depend on the questionnaire.

I.6.1 Individual questionnaire

(For all persons between 14 and 70 years of age)

Province ..... Urban rural district .....

.....

Personal particulars

1. Social environment
2. Sex
3. Civil status
4. Age
5. Level of education
   1. Higher education
   2. Secondary education
   3. Primary education
6. Socio-economic category

Sporting activities

7. Do you practise sport habitually?
   1. Throughout the year
   2. During holidays and at weekends
   3. No

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8. Do you take part in competitions?
   1. As a professional
   2. As an amateur
   3. No

9. Do you belong to a sports club?
   1. Yes
   2. No

10. How many hours a week do you practise sport on an average?
   1. Nil
   2. Less than two
   3. Two to four
   4. Over four

11. Sports practised habitually
   01. Underwater sports
   02. Gliding
   03. Athletics
   04. Motoring
   05. Basketball
   06. Handball
   07. Baseball
   08. Billiards
   09. Bowling
   10. Boxing
   11. Hunting and shooting
   12. Cycling
   13. Fencing
   14. Skiing
   15. Water-skiing
   16. Football
   17. Gymnastics
   18. Golf
   19. Weight-lifting
   20. Riding
   21. Hockey

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22. Judo
23. Wrestling
24. Mountaineering
25. Motor-boating
26. Swimming
27. Motor-cycling
28. Skating
29. Pelota
30. Angling
31. Canoeing
32. Rowing
33. Rugby
34. Badminton
35. Tennis
36. Table tennis
37. Archery
38. Olympic shooting (pistol and rifle)
39. Clay pigeon shooting
40. Pigeon shooting
41. Volleyball
42. Sailing

12. Which sport do you find most difficult to practise?
    1. Because of lack of facilities
    2. Because of lack of financial means

I.6.2 Tables of the findings of the survey

1. Sex, civil status, age and level of education as related to the habitual practice of sport.
2. Sex and socio-economic category as related to the habitual practice of sport.
3. Sex, civil status, age and level of education as related to participation in competitions.
4. Sex and socio-economic category as related to participation in competitions.
5. Sex, civil status, age and level of education as related to membership (or non-membership) of a sports club.

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6. Sex and socio-economic category as related to membership (or non-membership) of a sports club.
7. Sex, civil status, age and level of instruction as related to difficulties encountered in the practice of sports.
8. Sex and socio-economic category as related to difficulties encountered in the practice of sports.
9. Sports habitually practised as related to sex, age and socio-economic category.
10. Sex, age and socio-economic category as related to the number of sports habitually practised.
11. Sports which are the most difficult to practise, by sex.
12. Details, by province, of membership of a club, difficulties encountered and the habit of sports practice.
13. Details, by province, of sports habitually practised.
14. Sex, civil status, age and level of education as related to hours of practice.
15. Sex and socio-economic category as related to hours of practice.

II. ACTUAL ELITE

II.1 Definition: the élite is composed of sports practitioners who, having attained a specific level, are classed as such by the relevant federation.

The élite is divided into three categories:

National élite, which comprises the practitioners selected for the national team and classed as such by the relevant international federation on a proposal by the national federation concerned.

Regional élite, which is composed of the practitioners classed as such by the relevant national federation on a proposal by the regional federation concerned. It will include the members of the national élite.

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Local élite, which is composed of the practitioners classed as such by the relevant regional federation on a proposal by the local federation concerned. It will include the regional élite.

Criteria for selecting the élite

In the sports in which performance is measurable (records, points systems etc) those who fulfil the previously established criteria will be considered as the élite; in the other sports, including the team sports, performance throughout the season will serve as an indicator.

Conditions to be fulfilled

To be counted as one of the sporting élite, one must be registered by one's federation and be resident in the country, region or locality concerned.

II.2 Reference period: the sports season

II.3 Frequency: annually. Each local, regional etc section of the various federations will have to class its élite by name and have their selection approved by the relevant higher federation.

II.4 Data-collecting method: at the end of each season all the regional and local sections of the federations will, once the list of their élite has been approved by the higher federation, be virtually in possession of a census of their élite. The national federation of each sport will consequently have a census of the three categories of the élite.

II.5 Field of research: this will comprise the federated sports practitioners. In view of the number of hours that must be devoted tosport, it is difficult to imagine a member of the sporting élite not being a member of a federation, either as a professional or as an amateur.

II.6 Questionnaires, statistical tables and records

II.6.1 Statistical record of the national élite (see below)

II.6.2 Statistical records of the regional élite (one for each region)

II.6.3 Statistical records of the local élite (one for each locality)

II.6.4 National statistical abstract of the regional élite

II.6.5 National statistical abstract of the local élite

II.6.6 Regional statistical abstract of the local élite (one for each region).

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II.6.1 STATISTICAL RECORD OF THE NATIONAL ELITE

SEASON .....

SPORT	Amateurs			Professionals			TOTAL
	Men	Women	Total	Men	Women	Total	
Under-water sports							
Gliding							
-							
-							
-							
-							
-							
-							
-							
-							
-							
-							
-							
-							
-							
-							
-							
TOTAL							

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III. PUPILS RECEIVING PHYSICAL EDUCATION

III.1 Definition: pupils between 6 and 13 years of age inclusive who are receiving regular basic physical education. Two periods may be distinguished: that of dynamic expression (up to and including 10 years) and that of physico-sports education (from 11 to 13 years inclusive).

III.2 Reference period: the school year.

III.3 Frequency: annually.

III.4 Data-collecting method: the school authorities responsible should carry out a pupil census which will also show the level of physical education attained.

III.5 Field of research: pupils between 6 and 13 years of age inclusive.

III.6 Statistical record of pupils receiving physical education, distinguishing the two age-groups and their respective levels.

IV. HOURS OF SPORTS PRACTICE

IV.1 Definition: average number of hours a week habitually devoted to the exercise of any of the sports mentioned above (see I.6.1).

IV.2 Reference period: the calendar year in which the survey is carried out.

IV.3 Frequency: every four years, preferably coinciding with the Olympic year. Each federation should, however, send a simple annual questionnaire to all the members of its élite in order to ascertain the number of hours they spend on sports practice.

IV.4 Data-collecting method: pilot survey on sports activities (question no. 10 of questionnaire I.6.1), enabling information to be obtained concerning hours of sports practice in general. The number of hours spent on sports practice by the élite will be ascertained by means of an annual questionnaire sent out by each federation.

IV.5 Field of research: the entire population between 14 and 70 years of age and the élite of each sport as registered by the relevant federation.

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IV.6 Statistical records, tables and questionnaires

a. Tables compiled from the findings of the survey on sports activities:

1. Hours of sports practice according to sex, civil status, age and level of education.

2. Hours of sports practice by socio-economic category.

3. Hours spent on sports practice by professionals and amateurs.

4. Hours of sports practice by branch of sport.

b. Tables compiled from replies to the annual questionnaire sent to the élite:

1. Hours spent on sports practice by professionals and amateurs.

2. Hours of sports practice by branch of sport.

V. ORGANISATIONS

V.1 Definition: any association formed for the purpose of promoting the practice of sport and constituted in accordance with the rules, laws and regulations in force.

Sports organisations must not be confused with bodies which own or operate a sports installation; for example, a college or a firm which owns a sports installation is not a sports organisation since it does not have a specifically sports objective. However, if that college or firm has formed a club which is affiliated to a federation, that club will be a sports organisation.

V.2 Reference period:

a. 31 December of each year wherever there exists a register of sports clubs and associations.

b. In the absence of such a register, the reference period will be that of the census date.

V.3 Frequency:

a. Wherever a register of clubs and associations exists the federations will, so to speak, have a permanent census.

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b. In the absence of such a register, there will be a census every four years.

V.4 Data-collecting method:

a. Where a register exists application may be made to the relevant federations;

b. In the absence of such a register, the data must be obtained by means of a census.

V.5 Field of research: all the sports organisations.

Characteristics: see questionnaire V.6.1.

V.6 Questionnaire, statistical tables and records

V.6.1 Questionnaire

Province .....

Urban/rural district .....

1. Name .....
2. Headquarters .....
3. Federation on which the organisation depends .....

.....

4. Number of members .....
5. Form and conditions of membership .....

Free:
Restricted:
By subscription:

6. Sports sections which are organised:

	Number of teams	Number of sports practitioners
Underwater sports	.....	.....
Gliding	.....	.....
.....		
.....		
.....		
..... etc		

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7. Staff (number):

- Leading officials .....
- Administrators .....
  - Managers .....
  - Administrative staff .....
  - Subordinate staff .....
- Technicians .....
  - Sports doctors .....
  - Health auxiliaries .....
  - Coaches .....
  - Physical education teachers .....
  - Instructors .....

Total .....

V.6.2 Tables

1. Statistical record, by federation, of sections, clubs, teams and active members (practitioners).

2. Statistical record of the various categories of staff, by federation.

3. Statistical record, by region, of clubs, teams and practitioners belonging to each of the national federations.

4. Table of the number of clubs by federation, classed according to the number of members:
   - under 1,000
   - between 1,000 and 10,000
   - over 10,000

5. Table of the number of clubs, by federation, according to formalities and conditions of membership.

6. Table of the number of clubs, by federation, according to the number of sections, the number of teams and the number of sports practitioners.

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7. Table of federations according to the various categories of staff.

8. Table of regions according to the number of clubs, teams and sports practitioners belonging to each national federation.

VI. SPORTS ESTABLISHMENTS

VI.1 Definition: all the grounds, buildings and installations intended for the practice of one or more sports, and comprising the area reserved for the public as well as the services and annexes necessary for the smooth running of the establishment.

For the purposes of collecting the basic data and classifying and presenting the findings, we have adopted this statistical unit by analogy with the "establishment" unit as defined in the uniform international industrial classification of all economic activities. The sports establishment thus defined may be composed of one or more sports installations.

VI.1.1 Sports installations: this is defined as the ground, track or building used for the practice of a sport, for competition purposes, for training or simply for amusement.

VI.1.2 Area: we suggest two units:

1. The total area (m^2) reserved both for the practice of sport and for the public.

2. The area (m^2) reserved exclusively for the practice of sport ie the sports ground, track, area of water (swimming pool) etc.

VI.2 Reference period: that of the date on which the census will take place. That date should coincide with the date of the census of sports organisations.

VI.3 Frequency: every four years, coinciding with the Olympic period.

VI.4 Field of research: all the public and private establishments reserved for the practice of one of the sports listed (see list above).

VI.5 Data-collecting method: national census based on questionnaire VI.6.1.

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VI.6.1 Questionnaire

Province or county .....

Urban/rural district .....

_____ .....

_____

Name of the sports establishment .....

Address ..... Telephone No. ...

A. GENERAL DATA

1. Owning and managing bodies :

	Owner	Manager
Central government		
Local authorities		
Sports organisations		
Educational establishments		
Firms		
Others		

2. Total area (m2) ....

3. Use of the establishment .....

(NB. This question must be worded in great detail so as to cover the sports practised, opening hours for sports practitioners, élite, public etc. See also B below).

4. Number of places reserved for the public:
standing spectators .. seats ..... total .....

5. Existing services:

Cloakrooms .....

Hot-water showers .....

Cold-water showers .....

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Toilets for the public .....

Toilets for the sports practitioners .....

Medicine cabinet or sick-room .....

Bar or snack-bar .....

Other services .....

Sound installations .....

Artificial lighting of the sports areas .....

6. Data concerning personnel (number)

Leading officials .....

Administrators .....

Administrative staff .....

Subordinate staff .....

Technicians: .....

Doctors .....

Medical auxiliaries .....

Coaches .....

Teachers .....

Instructors .....

B. <u>DATA CONCERNING THE NATURE OF THE SPORTS INSTALLATIONS</u>

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B. DATA CONCERNING THE NATURE OF THE SPORTS INSTALLATIONS

Installations available	Number	Useful area (m2) (b)	Length (a)	Covered installations		Annual hours of use (b)	Users			
				number	m2		Educational establishments		Sports organisations	Other users
							Exclusively	and with other users		
Underwater sports										
Athletics										
Motor-racing track										
Basketball										
Handball										
Volleyball										
Baseball										
Billiards										
Boxing										
Bowling										
Cycle-racing track										
Fencing										
Skiing										
Water-skiing										
Motor-boating										
Sailing										
Football										
Gymnasia										
Golf										
Horse racing and polo										
Hockey										
Judo										
Wrestling										
Swimming pools										
Skating										
Pelota										
Canoeing										
Boating										
Rugby										
Tennis and Badminton										
Table tennis										
Archery										
Clay pigeon shooting										
Olympic shooting										
Multi-sports installations										

NOTES: a. In the case of athletics, motor and cycle racing tracks and skiing the length of the tracks will have to be specified.

b. Where there are several unitary installations the grand totals will have to be given.

VI.6.2 Tables

1. Table of owning and managing bodies as related to total area, seating capacity, useful area, number of hours of use annually.

2. Table of owning and managing bodies according to region.

3. Table of owning and managing bodies as related to establishments equipped for the practice of one sport, two, three ..... ten or more.

4. Table of owning and managing bodies as related to the size of the various services.

5. Table of owning and managing bodies as related to the number of hours of use (sport's practitioners, élite, public).

6. Table of establishments as related to total area, seating reserved for the public, number of sports practised.

7. Table of establishments, by region, according to the number of sports for which they are equipped.

8. Table of the various types of sports installations, by region.

9. Table of establishments, by region, according to the number of sports for which they are equipped, hours of use annually, covered installations, total area, useful area and area reserved for the public.

10. Table showing net area and annual hours use of indoor facilities and categories of users for the various types of installation.

11. Table of owning and managing bodies as related to the personnel employed.

12. Table of personnel employed as related to equipment for one, two, three ... ten or more sports.

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VII. TECHNICAL PERSONNEL

VII.1 Definition: in general, professional staff who exercise the functions for which they hold the necessary qualification officially recognised by the competent body.

1. Physical education teachers: technical staff in charge of the physical training of pupils in public or private educational establishments.

2. Instructors: technical staff whose main function is to win over the potential practitioner to sport and, whatever his age, give him elementary instruction in the sport concerned.

3. Coaches: specialised technical staff whose main function is to improve the practitioners' technique.

4. Referees, judges, time-keepers etc: technical staff who, in competitions, exercise the functions for which they are qualified.

5. Sports doctors: specialised technical staff whose function it is to provide preventive and re-educative treatment and medical assistance in general.

6. Health auxiliaries: technical staff assisting sports doctors.

VII.2 Reference period:

a. The date of the census of the sports organisations and establishments.

b. We believe that the federations should keep a permanent register of all technicians, in which case the reference period will be the sports season.

VII.3 Frequency:

a. Every four years, in the first case.

b. Annually, in the second case.

VII.4 Field of research: all the technical staff on the active strength.

VII.5 Data-collecting method

a. In case VII.2(a), the questionnaires relating to sports organisations and establishments.

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b. In case VII.2(b), each federation will keep a statistical record of all its technicians.

VII.6 Questionnaires, tables and statistical records

a. In case VII.2(a):

1. Table of technicians by region (one for each federation)

2. Table of technicians by branch of sport

b. In the second case:

1. Statistical record of technicians, by region (one for each federation).

2. Statistical record of technicians, by branch of sport

VIII. DIRECTING AND ORGANISING PERSONNEL

VIII.1 Definitions

1. Leading officials

Unpaid persons who supervise or direct public or private sports organisations or establishments.

2. Administrators

Paid staff who perform executive functions in sports organisations or establishments.

Depending on the category and importance of the function, they may be:

1. Managers: these perform executive and planning functions at the highest level

2. Administrative staff: day-to-day administration

Auxiliary administrative staff: shorthand, typing etc

3. Subordinate staff: caretaking and maintenance duties etc

VIII.2 Reference period: data of the censuses of sports organisations and establishments.

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VIII.3 Frequency: every four years.

VIII.4 Field of research: all staff in the service of sports organisations or establishments.

VIII.5 Data-collecting method: the necessary data will be obtained through censuses of sports organisations and establishments.

VIII.6 Tables, questionnaires and statistical records:

1. National table of managers and administrators in the service of sports organisations and establishments.

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CONDITIONING FRAMEWORK

	Demography	Socio-economic conditions	Physiologico-anatomical conditions	Climate and geography	Prevailing social customs
Aspects	- Distribution by age and sex (national and regional) - Population density by region - Distribution of the population (urban and rural)	- Per capita revenue (national and regional) and distribution - Consumer expenditure: - sports equipment - sports events - sports practice - Sports taxation system - Sports societies - Production and external trade in sports equipment	- Average height - Average weight - Average chest measurement - Total lung capacity - Cardiac rhythm	- Length of coasts and lakes - Hydrographic density - Orography - Temperatures - Rain and snow - Hours of light	- Working hours, school hours - Sports publications (communication media) - Politico-institutional system - Feeding habits - Sports mentality - Beliefs
Elements influenced	- Number of pupils, ordinary sports practitioners, élite	- Number of sports practitioners - Hours of practice - Area (m^2) covered by installations - Sports leaders - Sports bodies - Sports policies	- Types of installation - Types of sport - Elite	- Types of installation - Types of sport	- Ordinary sports practitioners - Sports bodies - Leaders - Hours of practice

ECOLOGY OF SPORT

Concordant interests	Health - Tourism - Arts - Education - etc
Conflicting interests	Other distractions - Work - etc

SPORT SITUATION

SPECIFIC SPORTS ELEMENTS

	BASIC				DIRECTION AND ORGANISATION			INSTRUMENTAL						
	Primary		Complementary		Sports bodies and structures	Human elements		Material	Human					
	Ordinary practitioners	Elite	P.E pupils	Hours of practice		Leading officials	Administrators	Installations and equipment	P.E teachers	Instructors	Judges and referees	Coaches	Health personnel	
													Doctors	Auxiliaries
Available data														
Actual situation														
Ideal situation														
Difference reality - ideal														
Financial value of that difference														

Once all the variables defining the sport situation have been determined, the comparative table can be drawn up for sport as a whole and for each branch of sport.

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DEVELOPMENT FACTORS

NOTE: The comments (definitions etc) on this table appear in the preceding chapter, section 3

	Organisation of competitions		Sports Administration		Training of P.E teachers	Training of instructors	Facilities/ ordinary sports practitioners	Facilities/ élite	Training of coaches	Physical education	Promotion	Improvement of techniques	Total by subject
State	mass	élite	masses	élite									
Local authorities													
Other organisations													
Schools													
Universities													
Sports organisations													
Total by factors													
Total by groups or factors	Consumption				Capital formation					Direct investment			
	Expenditure mass				Expenditure mass sport					Expenditure mass sport			
	Expenditure élite							Expenditure élite				Expenditure élite	

Total by subject
Total by factor
Total by sport
Total consumption, capital formation, direct investment
Total by mass and by élite

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